Instructions & Tasks

You are a system administrator who has been asked to deploy a 3-node Elasticsearch cluster with very specific configuration requirements:

* You will need to create an elastic user and then install Elasticsearch version 6.2.4 from an archive at /home/elastic/elasticsearch.
* Each Elasticsearch instance will need to listen on both the local and site-local addresses.
* The cluster should not be vulnerable to a split brain scenario.

| **Server** | **Node Name** | **Node Attributes** | **Node Roles** | **JVM Heap** |
| --- | --- | --- | --- | --- |
| Node 1 | master | zone=1 | Master | 512m |
| Node 2 | data1 | zone=2, temp=hot | Master, Data, Ingest | 768m |
| Node 3 | data2 | zone=3, temp=warm | Master, Data, Ingest | 768m |

**Don’t forget the prerequisites for Elasticsearch**. Specifically, you will need to install a Java 8 developer kit (JDK). You also need to persistently increase the max open file limit (nofile) for the elastic user to 65536. Lastly, you will need to persistently increase the max map count for processes (vm.max\_map\_count) to 262144 via sysctl.

help

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**Prepare the system, create the `elastic` user, and deploy Elasticsearch.**

Install Java

1. Install the Java 8 developer kit.

sudo yum install java-1.8.0-openjdk -y

Create the elastic User

1. Create the elastic user.

sudo useradd elastic

Configure Open File Limits

1. Open the limits.conf file as root.

#### sudo vim /etc/security/limits.conf

1. Add the following line near the bottom:

elastic - nofile 65536

1. Save and close the file.

Configure Memory Map Limits

1. Open the sysctl.conf file as root.

sudo vim /etc/sysctl.conf

1. Add the following line at the bottom:

vm.max\_map\_count=262144

1. Save and close the file.
2. Load the new sysctl values.

sudo sysctl -p

Deploy Elasticsearch

1. Become the elastic user.

sudo su - elastic

1. Download the binaries for Elasticsearch 6.2.4 in the elastic user's home directory.

curl -O https://artifacts.elastic.co/downloads/elasticsearch/elasticsearch-6.2.4.tar.gz

1. Unpack the archive.

tar -xzvf elasticsearch-6.2.4.tar.gz

1. Remove the archive.

rm elasticsearch-6.2.4.tar.gz

1. Rename the unpacked directory.

mv elasticsearch-6.2.4 elasticsearch

Repeat

1. Repeat these steps for each node.

help

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**Configure Node 1.**

Open the Config File

1. Log in to Node 1 and become the elastic user.

sudo su - elastic

1. Open the elasticsearch.yml file.

vim /home/elastic/elasticsearch/config/elasticsearch.yml

Name the Cluster

1. Change the following line:

#cluster.name: my-application

to

cluster.name: linux\_academy

Name the Node

1. Change the following line:

#node.name: node-1

to

node.name: master

Configure Node Attributes

1. Change the following line:

#node.attr.rack: r1

to

node.attr.zone: 1

Configure Node Roles

1. Add the following lines:
2. node.master: true
3. node.data: false

node.ingest: false

Bind to Local and Site-Local Addresses

1. Change the following:

#network.host: 192.168.0.1

to

network.host: [\_local\_, \_site\_]

Configure Host Discovery

1. Change the following:

#discovery.zen.ping.unicast.hosts: ["host1", "host2"]

to

discovery.zen.ping.unicast.hosts: ["private\_ip\_of\_node\_2", "private\_ip\_of\_node\_3"]

1. Remember to replace the tokens private\_ip\_of\_node\_2 and private\_ip\_of\_node\_3 with your actual IP addresses.

Avoid Split Brain

1. Change the following:

#discovery.zen.minimum\_master\_nodes:

to

discovery.zen.minimum\_master\_nodes: 2

help

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**Configure Node 2.**

Open the Config File

1. Log in to Node 2 and become the elastic user.

sudo su - elastic

1. Open the elasticsearch.yml file.

vim /home/elastic/elasticsearch/config/elasticsearch.yml

Name the Cluster

1. Change the following line:

#cluster.name: my-application

to

cluster.name: linux\_academy

Name the Node

1. Change the following line:

#node.name: node-1

to

node.name: data1

Configure Node Attributes

1. Change the following line:

#node.attr.rack: r1

to

node.attr.zone: 2

1. Add the following line:

node.attr.temp: hot

Configure Node Roles

1. Add the following lines:
2. node.master: true
3. node.data: true

node.ingest: true

Bind to Local and Site-Local Addresses

1. Change the following:

#network.host: 192.168.0.1

to

network.host: [\_local\_, \_site\_]

Configure Host Discovery

1. Change the following:

#discovery.zen.ping.unicast.hosts: ["host1", "host2"]

to

discovery.zen.ping.unicast.hosts: ["private\_ip\_of\_node\_1", "private\_ip\_of\_node\_3"]

1. Remember to replace the tokens private\_ip\_of\_node\_1 and private\_ip\_of\_node\_3 with your actual IP addresses.

Avoid Split Brain

1. Change the following:

#discovery.zen.minimum\_master\_nodes:

to

discovery.zen.minimum\_master\_nodes: 2

help

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**Configure Node 3.**

Open the Config File

1. Log in to Node 3 and become the elastic user.

sudo su - elastic

1. Open the elasticsearch.yml file.

vim /home/elastic/elasticsearch/config/elasticsearch.yml

Name the Cluster

1. Change the following line:

#cluster.name: my-application

to

cluster.name: linux\_academy

Name the Node

1. Change the following line:

#node.name: node-1

to

node.name: data2

Configure Node Attributes

1. Change the following line:

#node.attr.rack: r1

to

node.attr.zone: 3

1. Add the following line:

node.attr.temp: warm

Configure Node Roles

1. Add the following lines:
2. node.master: true
3. node.data: true

node.ingest: true

Bind to Local and Site-Local Addresses

1. Change the following:

#network.host: 192.168.0.1

to

network.host: [\_local\_, \_site\_]

Configure Host Discovery

1. Change the following:

#discovery.zen.ping.unicast.hosts: ["host1", "host2"]

to

discovery.zen.ping.unicast.hosts: ["private\_ip\_of\_node\_1", "private\_ip\_of\_node\_2"]

1. Remember to replace the tokens private\_ip\_of\_node\_1 and private\_ip\_of\_node\_2 with your actual IP addresses.

Avoid Split Brain

1. Change the following:

#discovery.zen.minimum\_master\_nodes:

to

discovery.zen.minimum\_master\_nodes: 2

help

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**Configure the master node's heap size.**

Open the Options File

1. Log in to Node 1 and become the elastic user.

sudo su - elastic

1. Open the jvm.options file.

vim /home/elastic/elasticsearch/config/jvm.options

Configure Heap Size

1. Change the following lines:
2. -Xms1g

-Xmx1g

to

-Xms512m

-Xmx512m

help

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**Configure the heaps for both data nodes.**

Open the Options File

1. Log in to Node 2 and become the elastic user.

sudo su - elastic

1. Open the jvm.options file.

vim /home/elastic/elasticsearch/config/jvm.options

Configure the Heap Size

1. Change the following lines:
2. -Xms1g

-Xmx1g

to

-Xms768m

-Xmx768m

Repeat

1. Repeat these steps on Node 3.

help

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**Start Elasticsearch as a daemon on each node.**

Execute the Binary

1. Log in on Node 1 and become the elastic user.

sudo su - elastic

1. Switch to the elasticsearch directory.

cd /home/elastic/elasticsearch

1. Start Elasticsearch as a daemon.

./bin/elasticsearch -d -p pid

Verify Cluster State and Configuration

1. Check the startup process.

less /home/elastic/elasticsearch/logs/linux\_academy.log

1. Check the node configuration.

curl localhost:9200/\_cat/nodes?v

Repeat

1. Repeat these steps for each node.