CentOS7下Elasticsearch单机版安装

1.ElasticSearch概述

ElasticSearch是一款**基于Apache Lucene**构建的**开源搜索引擎**，它**采用Java编写**并**使用Lucene构建索引**、提供**搜索功能**，ElasticSearch的目标是让全文搜索变得简单，开发者可以通过它简单明了的 **RestFul AP**I轻松地实现搜索功能，而不必去面对Lucene的复杂性。ES能够轻松的进行大规模的横向扩展，以支撑PB级的结构化和非结构化海量数据的处理。

2.Elasticsearch能够做什么

数字、文本、地理位置、结构化数据、非结构化数据。适用于所有数据类型

3.ElasticSearch下载（与JDK捆绑版）

说明：与JDK捆绑版不需要单独安装JDK

Elasticsearch是使用Java构建的，并且在每个发行版中都包含来自JDK维护者（GPLv2 + CE）的捆绑版本的 OpenJDK。捆绑的JVM是推荐的JVM，位于ElasticSearch安装目录下的jdk/elasticsearch目录内

3.1官网地址（中文）

https://www.elastic.co/cn/

3.2最新版本下载地址

https://www.elastic.co/cn/downloads/elasticsearch

3.3其他版本下载地址入口页面

https://www.elastic.co/guide/en/elasticsearch/reference/current/install-elasticsearch.html

3.4其他版本下载地址

https://www.elastic.co/cn/downloads/past-releases#elasticsearch

4.ElasticSearch下载（未与JDK捆绑版）

说明：比较灵活，需要自己单独安装JDK，

4.1ElasticSearch与JDK版本对应关系

官方建议：Java 9，Java 10，Java 12和Java 13是短期版本。我们建议不要使用它们，除非您准备好应对这种情况带来的快速释放节奏。

此处我们最好使用Oracle JDK 1.7+，推荐使用Oracle JDK 1.8

Elasticsearch和JVM

	Oracle / OpenJDK ** /采用OpenJDK 1.8.0	Oracle / OpenJDK ** 9	Oracle / OpenJDK ** 10	Oracle / OpenJDK ** 11	采用OpenJDK 11	Oracle / OpenJDK ** 12
Elasticsearch 5.0.x	✔	✘	✘	✘	✘	✘
Elasticsearch 5.1.x	✔	✘	✘	✘	✘	✘
Elasticsearch 5.2.x	✔	✘	✘	✘	✘	✘
Elasticsearch 5.3.x	✔	✘	✘	✘	✘	✘
Elasticsearch 5.4.x	✔	✘	✘	✘	✘	✘
Elasticsearch 5.5.x	✔	✘	✘	✘	✘	✘
Elasticsearch 5.6.x	✔	✘	✘	✘	✘	✘
Elasticsearch 6.0.x	✔	✘	✘	✘	✘	✘
Elasticsearch 6.1.x	✔	✘	✘	✘	✘	✘
Elasticsearch 6.2.x	✔	✔	✘	✘	✘	✘
Elasticsearch 6.3.x	✔	✘	✔	✘	✘	✘
Elasticsearch 6.4.x	✔	✘	✔	✘	✘	✘
Elasticsearch 6.5.x	✔	✘	✘	✔	✘	✘
Elasticsearch 6.6.x	✔	✘	✘	✔	✘	✘
Elasticsearch 6.7.x	✔	✘	✘	✔	✘	✔
Elasticsearch 6.8.x	✔	✘	✘	✔	✔	✔
Elasticsearch 7.0.x	✔	✘	✘	✔	✘	✔

4.2未与JDK捆绑版下载地址(最新版)

https://www.elastic.co/cn/downloads/elasticsearch-no-jdk

5.安装前准备

说明：由于需要下载准备的文件比较大，直接采用浏览器直接下载的方式，然后利用Xftp、WinScp等工具上传到Linux系统创建好的用于安装elasticsearch的目录下。网速较好的情况下，可以直接使用wget https://artifacts.elastic.co/downloads/elasticsearch/elasticsearch-7.0.0-linux-x86_64.tar.gz命令下载

5.1elasticsearch版本选择

此处选择elasticsearch-7.0.0-linux-x86 JDK捆绑版，大小为330 MB ,可根据实际需求自行选择合适版本

https://artifacts.elastic.co/downloads/elasticsearch/elasticsearch-7.0.0-linux-x86_64.tar.gz
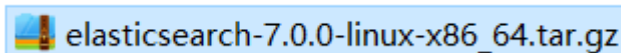
5.2 安装Oracle JDK1.8

6.安装

说明：6.安装的操作均用root用户操作

6.1创建安装目录

```
1  mkdir -p elasticsearch-7.0.0
2  cd elasticsearch-7.0.0
```

```
[root@weidong soft]# mkdir -p elasticsearch-7.0.0
[root@weidong soft]# cd elasticsearch-7.0.0
```

6.2解压缩elasticsearch-7.0.0安装包

```
1  tar -zxf elasticsearch-7.0.0-linux-x86_64.tar.gz
```

```
[root@weidong elasticsearch-7.0.0]# ll
total 338636
-rw-r--r-- 1 root root 346760090 Dec  5 23:16 elasticsearch-7.0.0-linux-x86_64.tar.gz
[root@weidong elasticsearch-7.0.0]# tar -zxf elasticsearch-7.0.0-linux-x86_64.tar.gz
[root@weidong elasticsearch-7.0.0]# ll
total 338640
drwxr-xr-x 9 root root      4096 Apr  6  2019 elasticsearch-7.0.0
-rw-r--r-- 1 root root 346760090 Dec  5 23:16 elasticsearch-7.0.0-linux-x86_64.tar.gz
[root@weidong elasticsearch-7.0.0]# ll elasticsearch-7.0.0
total 496
drwxr-xr-x  2 root root   4096 Apr  6  2019 bin
drwxr-xr-x  2 root root   4096 Apr  6  2019 config
drwxr-xr-x  8 root root   4096 Apr  6  2019 jdk
drwxr-xr-x  3 root root   4096 Apr  6  2019 lib
-rw-r--r--  1 root root  13675 Apr  6  2019 LICENSE.txt
drwxr-xr-x  2 root root   4096 Apr  6  2019 logs
drwxr-xr-x 29 root root   4096 Apr  6  2019 modules
-rw-r--r--  1 root root 447478 Apr  6  2019 NOTICE.txt
drwxr-xr-x  2 root root   4096 Apr  6  2019 plugins
-rw-r--r--  1 root root   8478 Apr  6  2019 README.textile
[root@weidong elasticsearch-7.0.0]#
```

6.3修改/config/elasticsearch.yml配置文件

```
1   cd config
2   vim elasticsearch.yml
3   #/config/elasticsearch.yml配置外网访问  默认外网无法访问  打开network.host注释  修改为
    改为0.0.0.0对外开放，如对特定ip开放则改为指定ip
4   network.host: 0.0.0.0
5   #可更改端口不为9200  默认为9200
6   http.port: 9200
7   #解决这个报错ERROR: [1] bootstrap checks failed
8   #[1]: the default discovery settings are unsuitable for production use; at
    least one of
9   #[discovery.seed_hosts, discovery.seed_providers,
    cluster.initial_master_nodes] must be configured
10  cluster.initial_master_nodes: ["node-1"]
```

```
# Make sure that the heap size is set to about half the memory available
# on the system and that the owner of the process is allowed to use this
# limit.
#
# Elasticsearch performs poorly when the system is swapping the memory.
#
# ---------------------------------- Network -----------------------------------
#
# Set the bind address to a specific IP (IPv4 or IPv6):
#
network.host: 0.0.0.0
#
# Set a custom port for HTTP:
#
http.port: 9200
#
# For more information, consult the network module documentation.
#
# --------------------------------- Discovery ----------------------------------
#
# Pass an initial list of hosts to perform discovery when this node is started:
# 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:
#
#cluster.initial_master_nodes: ["node-1", "node-2"]
cluster.initial_master_nodes: ["node-1"]
#
# For more information, consult the discovery and cluster formation module documentation.
#
# ---------------------------------- Gateway -----------------------------------
#
# Block initial recovery after a full cluster restart until N nodes are started:
#
#gateway.recover_after_nodes: 3
#
# For more information, consult the gateway module documentation.
-- INSERT --                                                            75,2        89%
```

6.4修改系统环境变量

```
1  vim /etc/sysctl.conf
2  #添加如下内容
3  vm.max_map_count=262144
4  #修改完需要重启才能生效
5  sysctl -w vm.max_map_count=262144
```


6.5修改JVM分配大小

```
1  cd config
2  vim jvm.options
3  #Xms和Xmx大小要一致 默认是1g 可以根据虚拟机实际大小改变此值，如
4  -Xms2g
5  -Xmx2g
6  #或者
7  -Xms512m
8  -Xmx512m
```

```
[root@weidong config]# ll
total 36
-rw-rw---- 1 root root  2826 Dec  5 23:40 elasticsearch.yml
-rw-rw---- 1 root root  3524 Apr  6  2019 jvm.options
-rw-rw---- 1 root root 17170 Apr  6  2019 log4j2.properties
-rw-rw---- 1 root root   473 Apr  6  2019 role_mapping.yml
-rw-rw---- 1 root root   197 Apr  6  2019 roles.yml
-rw-rw---- 1 root root     0 Apr  6  2019 users
-rw-rw---- 1 root root     0 Apr  6  2019 users_roles
[root@weidong config]# vim jvm.options

# JVM configuration

################################################################
## IMPORTANT: JVM heap size
################################################################
##
## You should always set the min and max JVM heap
## size to the same value. For example, to set
## the heap to 4 GB, set:
##
## -Xms4g
## -Xmx4g
##
## See https://www.elastic.co/guide/en/elasticsearch/reference/current/heap-size.html
## for more information
##
################################################################

# Xms represents the initial size of total heap space
# Xmx represents the maximum size of total heap space

-Xms1g
-Xmx1g

################################################################
## Expert settings
################################################################
```

6.6修改最大文件描述符数量和用户最大线程数

```
1  vim /etc/security/limits.conf
2  # /etc/security/limits.conf中添加如下内容  只有root用户才有权限修
   改/etc/security/limits.conf
3  * soft nofile 65536
4  * hard nofile 65536
5  * soft nproc 4096
6  * hard nproc 4096
```

设置限制数量，第一列表示用户，* 表示所有用户

soft nproc： 单个用户可用的最大进程数量(超过会警告);
hard nproc： 单个用户可用的最大进程数量(超过会报错);
soft nofile： 可打开的文件描述符的最大数(超过会警告);
hard nofile： 可打开的文件描述符的最大数(超过会报错);

6.7配置ElasticSearch JAVA_HOME和PATH

如果本地配置了JAVA_HOME的环境路径，而且Java的版本比较低的话启动就会失败，ElasticSearch 中有JDK的版本最好使用该版本的JDK

```
1  #以root用户进入到ElasticSearch安装目录下
2  cd elasticsearch-7.0.0
3  vim bin/elasticsearch
4  #在开始的位置加入：
5  export JAVA_HOME=/root/soft/elasticsearch-7.0.0/elasticsearch-7.0.0/jdk #（此
   处es的jdk所在目录）
6  export PATH=$JAVA_HOME/bin:$PATH
7
8
```


7.启动ElasticSearch

ElasticSearch为了安全考虑，以root用户启动ElasticSearch会报错

7.1创建es用户，用于启动ElasticSearch

```
1  #以root用户进入到ElasticSearch安装目录下
2  cd elasticsearch-7.0.0
3  #添加一般用户es 用于启动ElasticSearch
4  useradd es
5  #给es用户设置密码为123456，可以替换成自己的密码
6  echo "123456" | passwd es --stdin
7  #更改文件夹所属权 将ElasticSearch目录权限改为es用户
```

```
 8   chown -R es:es ./
 9   #使es用户具有打开root目录的权限  此处elasticsearch-7.0.0我们这里安装在root目录下  不进
     行此步骤  则后面启动会报错
10   #  报错信息为：... Permission denied
11   chmod 777 /root
12   #在/etc/sudoers文件里给该用户es添加sudo权限
13   vim /etc/sudoers
14   ## Allow root to run any commands anywhere
15   #root    ALL=(ALL)         ALL  这行下面添加下面添加
16   es    ALL=(ALL)         ALL
```

```
[root@weidong config]# cd ..
[root@weidong elasticsearch-7.0.0]# ll
total 496
drwxr-xr-x  2 root root   4096 Apr  6  2019 bin
drwxr-xr-x  2 root root   4096 Dec  5 23:52 config
drwxr-xr-x  8 root root   4096 Apr  6  2019 jdk
drwxr-xr-x  3 root root   4096 Apr  6  2019 lib
-rw-r--r--  1 root root  13675 Apr  6  2019 LICENSE.txt
drwxr-xr-x  2 root root   4096 Apr  6  2019 logs
drwxr-xr-x 29 root root   4096 Apr  6  2019 modules
-rw-r--r--  1 root root 447478 Apr  6  2019 NOTICE.txt
drwxr-xr-x  2 root root   4096 Apr  6  2019 plugins
-rw-r--r--  1 root root   8478 Apr  6  2019 README.textile
[root@weidong elasticsearch-7.0.0]# pwd
/root/soft/elasticsearch-7.0.0/elasticsearch-7.0.0
[root@weidong elasticsearch-7.0.0]# useradd es
[root@weidong elasticsearch-7.0.0]# echo "123456" | passwd es --stdin
Changing password for user es.
passwd: all authentication tokens updated successfully.
[root@weidong elasticsearch-7.0.0]# chown -R es:es ./
[root@weidong elasticsearch-7.0.0]#
```

```
[root@weidong elasticsearch-7.0.0]# vim /etc/sudoers

## Sudoers allows particular users to run various commands as
## the root user, without needing the root password.
##
## Examples are provided at the bottom of the file for collections
## of related commands, which can then be delegated out to particular
## users or groups.
##
## This file must be edited with the 'visudo' command.

## Host Aliases
## Groups of machines. You may prefer to use hostnames (perhaps using
## wildcards for entire domains) or IP addresses instead.
# Host_Alias     FILESERVERS = fs1, fs2
# Host_Alias     MAILSERVERS = smtp, smtp2

## User Aliases
## These aren't often necessary, as you can use regular groups
## (ie, from files, LDAP, NIS, etc) in this file - just use %groupname
## rather than USERALIAS
# User_Alias ADMINS = jsmith, mikem


## Command Aliases
## These are groups of related commands...

## Networking
# Cmnd_Alias NETWORKING = /sbin/route, /sbin/ifconfig, /bin/ping, /sbin/dhclient, /usr/bin/net, /sbin/iptables, /usr/bin/rfcomm, /usr/bin/wvdial, /sbin/iwconfig, /sbin/mii-tool
```

```
# Disable this option for new behavior.
Defaults    always_query_group_plugin

Defaults    env_reset
Defaults    env_keep =  "COLORS DISPLAY HOSTNAME HISTSIZE KDEDIR LS_COLORS"
Defaults    env_keep += "MAIL PS1 PS2 QTDIR USERNAME LANG LC_ADDRESS LC_CTYPE"
Defaults    env_keep += "LC_COLLATE LC_IDENTIFICATION LC_MEASUREMENT LC_MESSAGES"
Defaults    env_keep += "LC_MONETARY LC_NAME LC_NUMERIC LC_PAPER LC_TELEPHONE"
Defaults    env_keep += "LC_TIME LC_ALL LANGUAGE LINGUAS _XKB_CHARSET XAUTHORITY"

#
# Adding HOME to env_keep may enable a user to run unrestricted
# commands via sudo.
#
# Defaults   env_keep += "HOME"

Defaults    secure_path = /sbin:/bin:/usr/sbin:/usr/bin

## Next comes the main part: which users can run what software on
## which machines (the sudoers file can be shared between multiple
## systems).
## Syntax:
##
##      user    MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)       ALL
es      ALL=(ALL)       ALL
## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DRIVERS

## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)       ALL

## Same thing without a password
# %wheel        ALL=(ALL)       NOPASSWD: ALL

## Allows members of the users group to mount and unmount the
-- INSERT --                                                                    102,3          89%
```

7.2切换到es用户

```
1 | su es
```

```
[root@weidong elasticsearch-7.0.0]# su es
```

7.3启动ElasticSearch

前台启动：

说明：当你ctrl+c会终止进程

```
1  #进入到ElasticSearch安装目录下
2  cd elasticsearch-7.0.0
3  bin/elasticsearch
4  #或者
5  ./bin/elasticsearch
```

后台启动：

```
1  #进入到ElasticSearch安装目录下
2  cd elasticsearch-7.0.0
3  bin/elasticsearch -d
4  #或者
5  ./bin/elasticsearch -d
```

8.验证ElasticSearch是否启动成功

方法一：启动过程中，当看到日志输出started的时候则说明ElasticSearch启动成功

方法二：浏览器输入虚拟机地址:9200，比如：http://172.21.0.17:9200

输入下面信息的时候，则说明ElasticSearch启动成功

```
1  {
2    "name" : "weidong",
3    "cluster_name" : "elasticsearch",
4    "cluster_uuid" : "_na_",
5    "version" : {
6      "number" : "7.0.0",
7      "build_flavor" : "default",
```

```
 8            "build_type" : "tar",
 9            "build_hash" : "b7e28a7",
10            "build_date" : "2019-04-05T22:55:32.697037Z",
11            "build_snapshot" : false,
12            "lucene_version" : "8.0.0",
13            "minimum_wire_compatibility_version" : "6.7.0",
14            "minimum_index_compatibility_version" : "6.0.0-beta1"
15        },
16        "tagline" : "You Know, for Search"
17    }
```

方法三：虚拟机里面执行命令：

```
1  curl 172.21.0.17:9200
```

输入下面信息的时候，则说明ElasticSearch启动成功

```
[root@weidong ~]# curl 172.21.0.17:9200
{
  "name" : "weidong",
  "cluster_name" : "elasticsearch",
  "cluster_uuid" : "_na_",
  "version" : {
    "number" : "7.0.0",
    "build_flavor" : "default",
    "build_type" : "tar",
    "build_hash" : "b7e28a7",
    "build_date" : "2019-04-05T22:55:32.697037Z",
    "build_snapshot" : false,
    "lucene_version" : "8.0.0",
    "minimum_wire_compatibility_version" : "6.7.0",
    "minimum_index_compatibility_version" : "6.0.0-beta1"
  },
  "tagline" : "You Know, for Search"
}
[root@weidong ~]#
```

方法四：虚拟机里面执行命令：

```
1  ps -ef |grep elasticsearch
```

输入下面信息的时候，则说明ElasticSearch启动成功

```
[root@weidong ~]# ps -ef |grep elasticsearch
es      24537 23679 14 10:01 pts/0    00:00:48 /root/soft/elasticsearch-7.0.0/elasticsearch-7.0.0/jdk/bin/java -Xms1g -Xmx1g -XX:+UseConcMarkSweepGC -XX:CMSInitiatingOccupancyFraction=
OccupancyOnly -Des.networkaddress.cache.ttl=60 -Des.networkaddress.cache.negative.ttl=10 -XX:+AlwaysPreTouch -Xss1m -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Djna.nosys=true -XX:
w -Dio.netty.noUnsafe=true -Dio.netty.noKeySetOptimization=true -Dio.netty.recycler.maxCapacityPerThread=0 -Dlog4j.shutdownHookEnabled=false -Dlog4j2.disable.jmx=true -Djava.io.tmpdir=/
77018033917818 -XX:+HeapDumpOnOutOfMemoryError -XX:HeapDumpPath=data -XX:ErrorFile=logs/hs_err_pid%p.log -Xlog:gc*,gc+age=trace,safepoint:file=logs/gc.log:utctime,pid,tags:filecount=32
le.providers=COMPAT -Dio.netty.allocator.type=unpooled -Des.path.home=/root/soft/elasticsearch-7.0.0/elasticsearch-7.0.0 -Des.path.conf=/root/soft/elasticsearch-7.0.0/elasticsearch-7.0
on.flavor=default -Des.distribution.type=tar -Des.bundled_jdk=true -cp /root/soft/elasticsearch-7.0.0/elasticsearch-7.0.0/lib/* org.elasticsearch.bootstrap.Elasticsearch
es      24619 24537  0 10:01 pts/0    00:00:00 /root/soft/elasticsearch-7.0.0/elasticsearch-7.0.0/modules/x-pack-ml/platform/linux-x86_64/bin/controller
root    25929 25310  0 10:07 pts/1    00:00:00 grep --color=auto elasticsearch
```