Observe Linux System Metrics Using Docker

Install Docker

Installing docker is so simple. Just write the following code in your terminal and run it.

```
sudo snap install docker
```

Install Elasticsearch with Docker

Pulling the image of Elasticsearch

Obtaining Elasticsearch for Docker is as simple as issuing a `docker pull` command against the Elastic Docker registry.

```
docker pull docker.elastic.co/elasticsearch/elasticsearch:7.4.2
```

Starting a single node cluster with Docker

To start a single-node Elasticsearch cluster for development or testing, specify single-node discovery to bypass the bootstrap checks:

```
docker run -p 9200:9200 -p 9300:9300 -e "discovery.type=single-node" docker.elastic.co/elasticsearch/elasticsearch:7.4.2
```

If you want to work with multi-node, you can visit the following link: Install Elasticsearch with Docker | Elasticsearch Guide [7.4] | Elastic

So now if you run the following url in your browser, you can see that your Elasticsearch is running with port 9200.

```
http://localhost:9200/
{
 "name" : "8f7a***f2c3d",
 "cluster_name" : "docker-cluster",
 "cluster_uuid" : "e4DIksW3******-DqwrHhA",
 "version" : {
   "number" : "7.4.2",
   "build_flavor" : "default",
   "build_type" : "docker",
   "build_hash" : "2f90bbf7b93631e52********b049cb44ec25e96",
   "build_date" : "2019-10-28T20:40:44.881551Z",
   "build_snapshot" : false,
   "lucene_version" : "8.2.0",
   "minimum_wire_compatibility_version" : "6.8.0",
   "minimum_index_compatibility_version" : "6.0.0-beta1"
 },
 "tagline" : "You Know, for Search"
```

```
}
```

Install Kibana with Docker

Now it is time to pull Kibana.

Pulling the image of Kibana

Obtaining Kibana for Docker is as simple as issuing a `docker pull` command against the Elastic Docker registry.

```
docker pull docker.elastic.co/kibana/kibana:7.4.2
```

Running Kibana on Docker for development

Kibana can be quickly started and connected to a local Elasticsearch container for development or testing use with the following command:

```
docker run --link YOUR_ELASTICSEARCH_CONTAINER_NAME_OR_ID:elasticsearch -p 5601:5601 docker.elastic.co/kibana/kibana:7.4.2
```

`YOUR_ELASTICSEARCH_CONTAINER_NAME_OR_ID` : You can find your container id above output of the URL.

Install Metricbeat with Docker

Pulling the image

Obtaining Metricbeat for Docker is as simple as issuing a `docker pull` command against the Elastic Docker registry.

```
docker pull docker.elastic.co/beats/metricbeat:7.4.2
```

Now modify the docker-compose.yml as follows:

```
version: '2.2'

services:

 node01:

   image: docker.elastic.co/elasticsearch/elasticsearch:7.4.2

   #stdin_open: true # docker run -i

   #tty: true        # docker run -t

   container_name: node01

   environment:

     - node.name=node01

     - cluster.name=es-cluster-7

     - discovery.type=single-node

     - "ES_JAVA_OPTS=-Xms128m -Xmx128m"

   ulimits:

     memlock:
```

```
      soft: -1
      hard: -1
    volumes:
      - es-data01:/usr/share/elasticsearch/data
    ports:
      - 9200:9200
    networks:
      - es-network
  kibana:
    image: docker.elastic.co/kibana/kibana:7.4.2
    environment:
      ELASTICSEARCH_HOSTS: http://node01:9200
    ports:
      - 5601:5601
    networks:
      - es-network
    depends_on:
      - node01
```

```
 metricbeat:
   image: docker.elastic.co/beats/metricbeat:7.4.2
   environment:
     ELASTICSEARCH_HOSTS: http://node01:9200
   volumes:
     - metricbeat-data01:/usr/share/metricbeat/data
   networks:
     - es-network
   depends_on:
     - node01
volumes:
 es-data01:
   driver: local
 metricbeat-data01:
   driver: local
networks:
 es-network:
```

```
driver: bridge
```

A service named “metricbeat” and declared the target elasticsearch host through an environment variable (ELASTICSEARCH_HOSTS). Also a new volume (for data storage) is added for this service (metricbeat-data01). The network for this service should be set as “es-network”, the reason is the service should be on the same network as our target elasticsearch host / node.

Let’s kick start the services by issuing:

```
docker-compose up
```

Within a minute or two, the 3 services (elasticsearch node, kibana and metricbeat) should be online. To verify the results, open kibana at `http://localhost:5601` and navigate to the metrics app.

Now open Kibana and you will find a index prefixed with `metricbeat-7.4.2`

Create an index pattern and see your data in Kibana dashboard.

Open image-20220315-135809.png

You can also create Kibana visualization.

So its time to enjoy with your system metric data.

References:

1. *Install search with Docker | search Guide [7.4]*. (n.d.). Elastic. Install Elasticsearch with Docker | Elasticsearch Guide [7.4] | Elastic

2. *Running Kibana on Docker | Kibana Guide [7.4]*. (n.d.). Elastic. Running Kibana on Docker | Kibana Guide [7.4] | Elastic
3. *Running Metricbeat on Docker | Metricbeat Reference [7.4]*. (n.d.). Elastic. Running Metricbeat on Docker | Metricbeat Reference [7.4] | Elastic
4. *Running Metricbeat on Docker | Metricbeat Reference [7.4]*. (n.d.-b). Elastic. Running Metricbeat on Docker | Metricbeat Reference [7.4] | Elastic