Filebeat

Metricbeat

Elastic Observability Workshop

Lab 2 - Capturing and Visualizing Metrics and Logs

Overview

- Download Metricbeat
- Setup and point to common elasticsearch cluster
- Change back to cloud.id/cloud.auth of your deployment (Lab 1)
- Download Filebeat
- Download nginx logs
- Setup nginx module for Filebeat
- Validate data in Kibana

Windows Install Instructions

Mac Install Instructions

Validate Data in Kibana (Common)

Introduction

In this lab guide we will walk you through how to ingest multiple logs files and metrics into the Elastic stack.

Instructions are provided for both Windows and Mac OS/Linux Operating Systems. Please follow the instructions for your operating system and then follow the steps on the last section **Validate Data in Kibana**.

Local Laptop Installation

Synopsis

Beats agents are data shippers that are designed to be lightweight. Each beat targets a specific type of data set. For the purposes of our lab we will use Metricbeat which will send important metrics like CPU and memory utilization into Elasticsearch. We will also use Filebeat which will not only send log files from services like NGINX and Apache, but also system authorization logs.

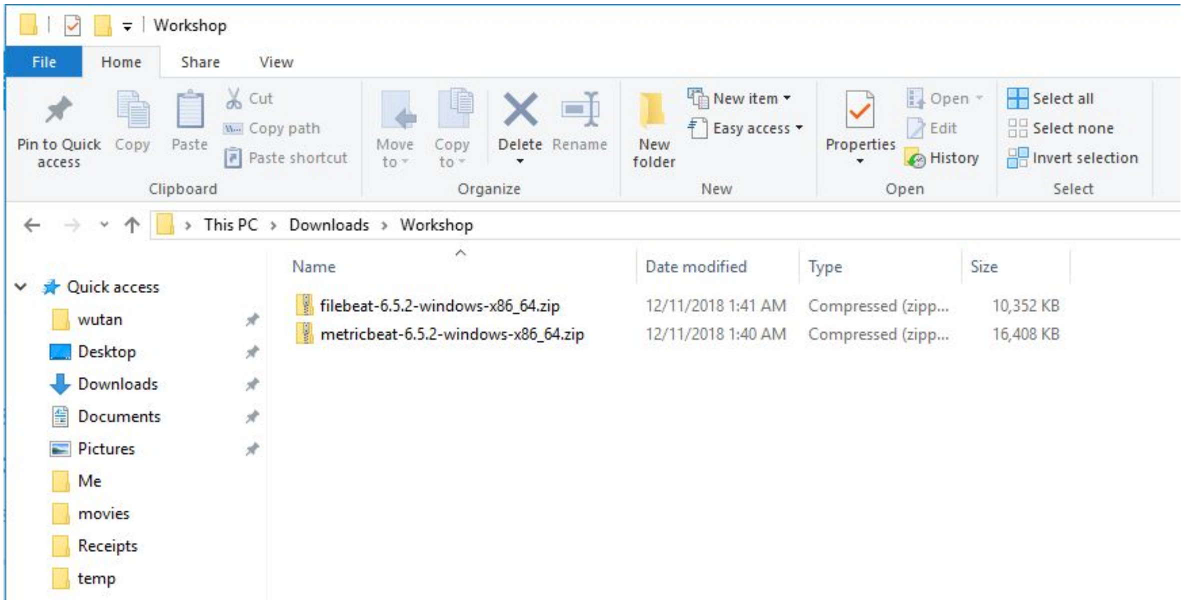
Software Download

Software	**URL**
Metricbeat	https://www.elastic.co/downloads/beats/metricbeat
Filebeat	https://www.elastic.co/downloads/beats/filebeat

Windows Instructions

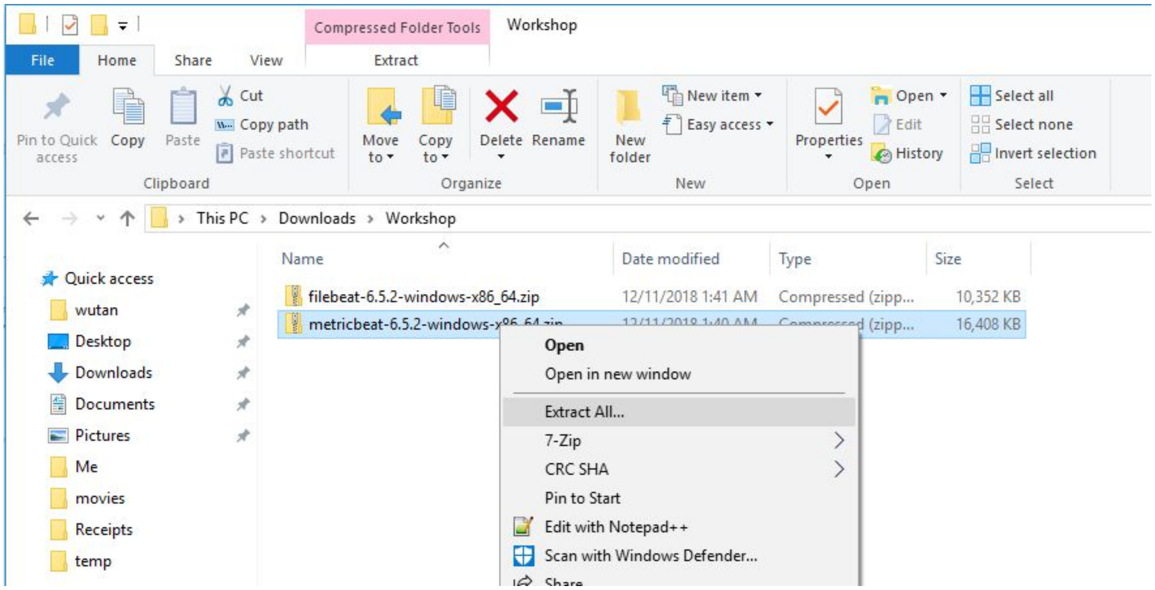
Metricbeat

1) Open a Windows Explorer and navigate to the location that you downloaded metricbeat to. (Your version of downloaded beat will be different than the screenshot below based on the latest version available at the time of download)



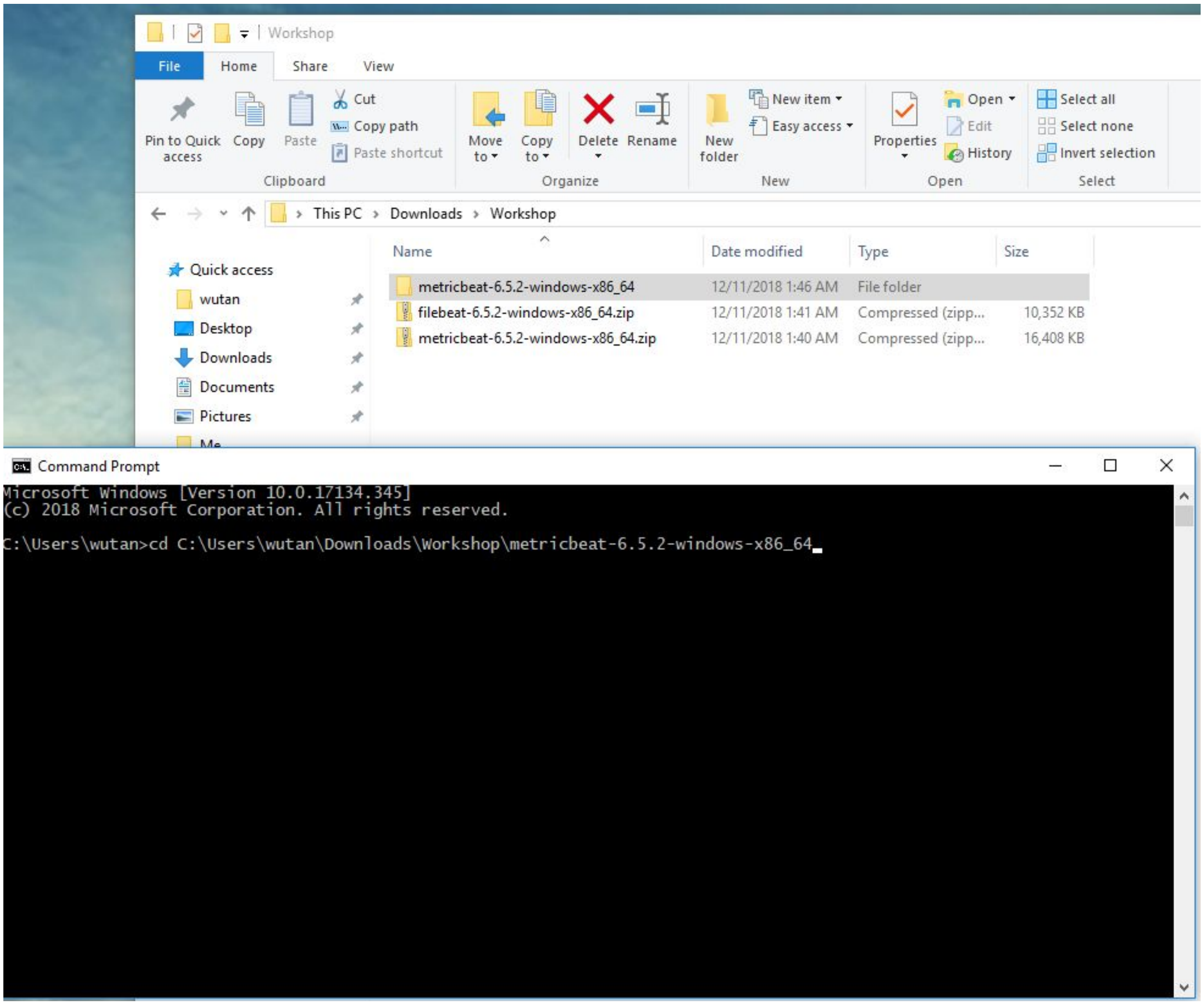
Name	Date modified	Type	Size
filebeat-6.5.2-windows-x86_64.zip	12/11/2018 1:41 AM	Compressed (zipp...	10,352 KB
metricbeat-6.5.2-windows-x86_64.zip	12/11/2018 1:40 AM	Compressed (zipp...	16,408 KB

2) Extract the metricbeat-... zip file that you downloaded



Name	Date modified	Type	Size
filebeat-6.5.2-windows-x86_64.zip	12/11/2018 1:41 AM	Compressed (zipp...	10,352 KB
metricbeat-6.5.2-windows-x86_64.zip	12/11/2018 1:40 AM	Compressed (zipp...	16,408 KB

3) Open up a command prompt and type in `cd` (add a space after cd). Now drag-n-drop the extracted folder from step #2 to the command prompt window. Notice how it filled out the full path for you in the command prompt window? You can also type out the full path if you are a glutton for pain. Hit enter.



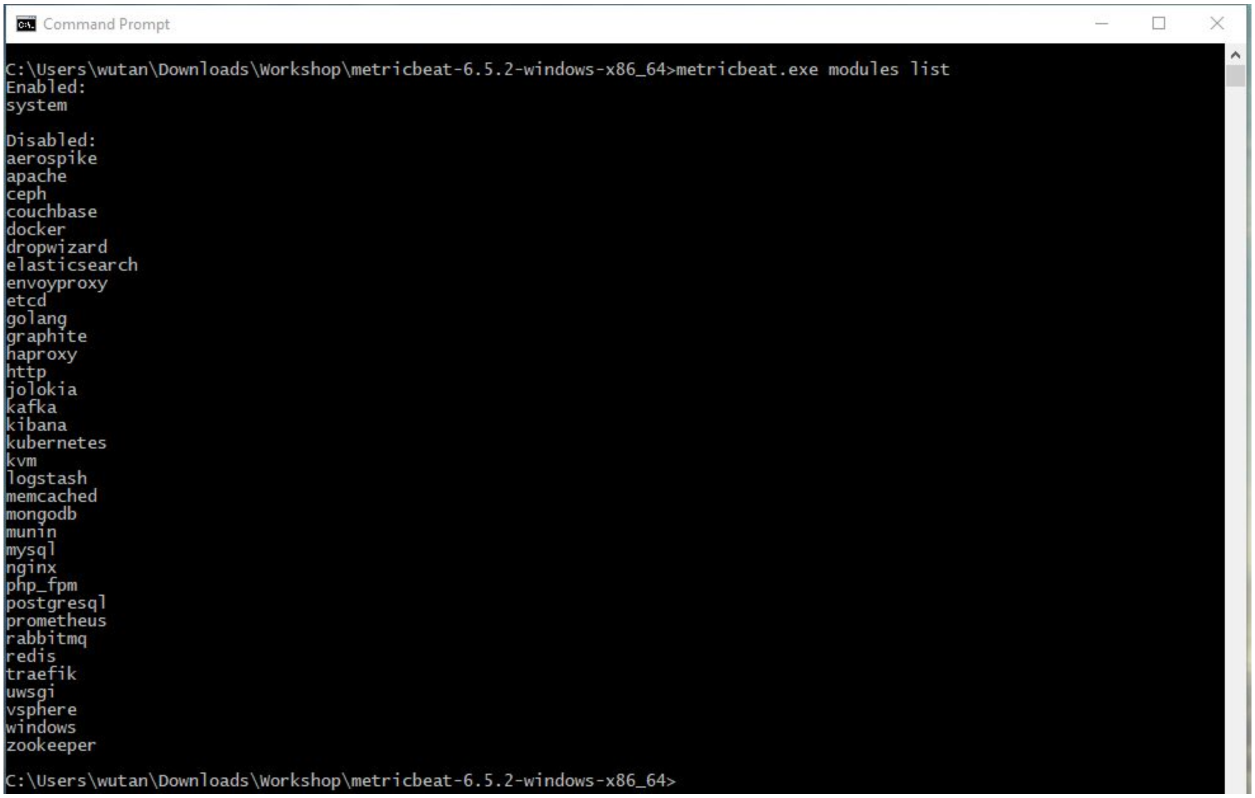
Name	Date modified	Type	Size
metricbeat-6.5.2-windows-x86_64	12/11/2018 1:46 AM	File folder	
filebeat-6.5.2-windows-x86_64.zip	12/11/2018 1:41 AM	Compressed (zipp...	10,352 KB
metricbeat-6.5.2-windows-x86_64.zip	12/11/2018 1:40 AM	Compressed (zipp...	16,408 KB

```
Microsoft Windows [Version 10.0.17134.345]
(c) 2018 Microsoft Corporation. All rights reserved.

:\Users\wutan>cd C:\Users\wutan\Downloads\Workshop\metricbeat-6.5.2-windows-x86_64_
```

4) Now list modules that are available

```
.\metricbeat.exe modules list
```

You should see which modules are ***enabled*** and which modules are ***disabled.*** Out of the box the **system** module is the only one that is enabled.
(Elastic actively adds modules to the beats in new versions to make the ingestion easier, the list of modules in the version you downloaded might be different)



```
C:\Users\wutan\Downloads\Workshop\metricbeat-6.5.2-windows-x86_64>metricbeat.exe modules list
Enabled:
system

Disabled:
aerospike
apache
ceph
couchbase
docker
dropwizard
elasticsearch
envoyproxy
etcd
golang
graphite
haproxy
http
jolokia
kafka
kibana
kubernetes
kvm
logstash
memcached
mongodb
munin
mysql
nginx
php_fpm
postgresql
prometheus
rabbitmq
redis
traefik
uwsgi
vsphere
windows
zookeeper

C:\Users\wutan\Downloads\Workshop\metricbeat-6.5.2-windows-x86_64>
```

5) Before we setup Elasticsearch to accept system metrics we need to tell Metricbeat where Elasticsearch is and provide credentials to login. We do this by editing the configuration file for Metricbeat called metricbeat.yml.

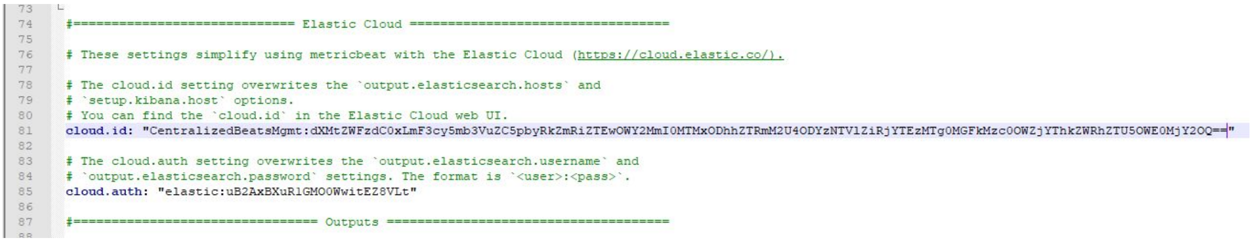
YAML files don't like hard tabs. Do not use them if you are editing a .yml file because they will cause errors. To learn more about .yml files see this link: https://en.wikipedia.org/wiki/YAML

To start with, instead of sending metrics from your laptop to the cluster you have created in Lab 1, we are going to first send it to a shared Elasticsearch cluster created by the instructor. It will be used to demonstrate Kibana Infrastructure UI and also mimics a more realistic scenario - multiple endpoints sending metrics to single Elasticsearch Cluster.

Use your favorite text editor (e.g. Notepad++) to open metricbeat.yml and replace **cloud.id** and **cloud.auth** with the following values:

```
cloud.id:
"observability_workshop:dXMtd2VzdDEuZ2NwLmNsb3VkLmVzLmlvJDAzN2NhZDU4M2ZiMTRkYTc4MGUzYTE2NjA3OGU0OTc5JDdiZDg5MWFhOGJhMDQ1NzFiMzg4N2ZkMDAzYjE2MWYz"
cloud.auth: "elastic:ncyRLYhJAl8akCSZLYBnBlED"
```

Example:



```
#============================== Elastic Cloud ==================================

# These settings simplify using metricbeat with the Elastic Cloud (https://cloud.elastic.co/).

# The cloud.id setting overwrites the `output.elasticsearch.hosts` and
# `setup.kibana.host` options.
# You can find the `cloud.id` in the Elastic Cloud web UI.
cloud.id: "CentralizedBeatsMgmt:dXMtZWFzdC0xLmF3cy5mb3VuZC5pbyRkZmRiZTEwOWY2MmI0MTMxODhhZTRmM2U4ODYzNTV1ZiRjYTEzMTg0MGFkMzc0OWZjYThkZWRhZTU5OWE0MjY2OQ=="

# The cloud.auth setting overwrites the `output.elasticsearch.username` and
# `output.elasticsearch.password` settings. The format is `<user>:<pass>`.
cloud.auth: "elastic:uB2AxBXuR1GMO0WwitEZ8VLt"

#================================ Outputs =====================================
```

It’s not uncommon that a copy paste from above snippet may result in formatting issues in the file depending on your editor. A good sign is what you copied and pasted ended up in multiple lines. If you notice errors about “Error in line…” after you run the commands below, it is probably because of a formatting error.

6) Run the following command to start sending the metrics information to centralized Elasticsearch cluster (step 5)

```
.\metricbeat.exe -e
```

At this point your system should show up on the Infrastructure UI instructor is sharing on projector.

7) After you saw your system show up on Infrastructure UI of the common cluster, change the ***cloud.id*** and ***cloud.auth*** values in the .yml file back to the ones for the Elasticsearch deployment you created in Lab 1

Now we are ready to setup your Elastic deployment to receive the system metric data, visualize it, and create Machine Learning jobs to detect anomalies. Fortunately it only takes 2 commands! The first command sets up the system Metricbeat module in Elasticsearch and Kibana (index templates, dashboards, ML jobs etc), this only needs to be run once across all your Metricbeat installs, the second command starts Metricbeat.

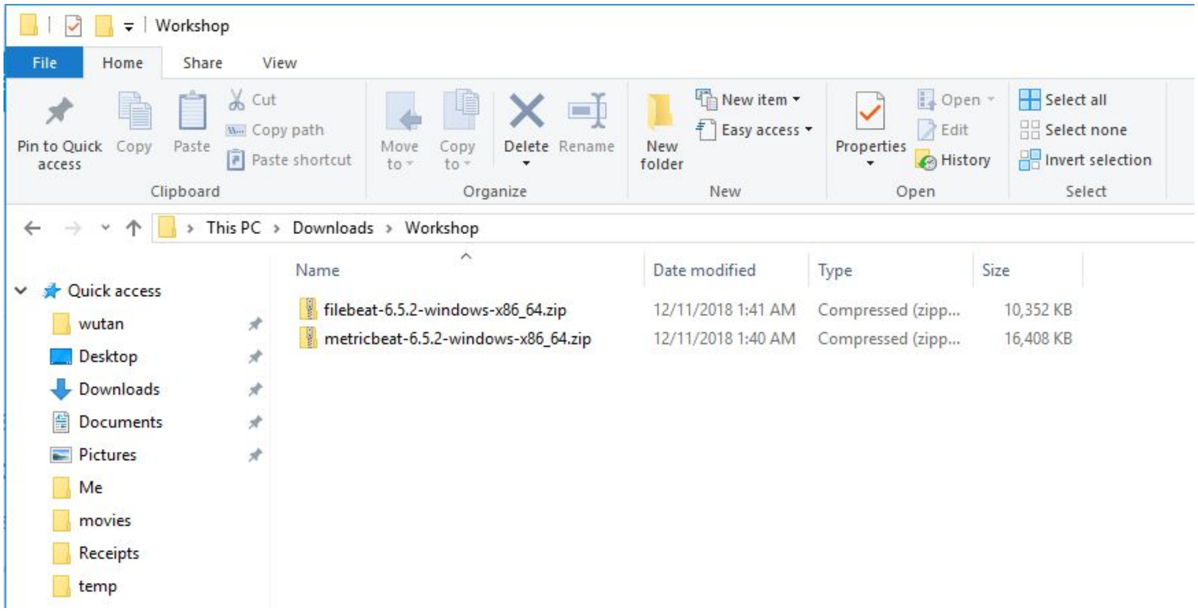
```
.\metricbeat.exe setup
.\metricbeat.exe -e
```

Windows Instructions

Filebeat

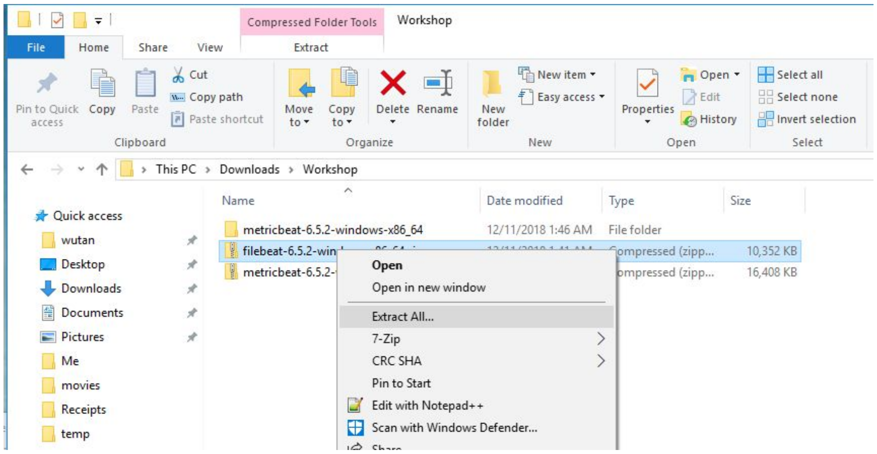
Filebeat

1) Open a Windows Explorer and navigate to the location that you downloaded filebeat to

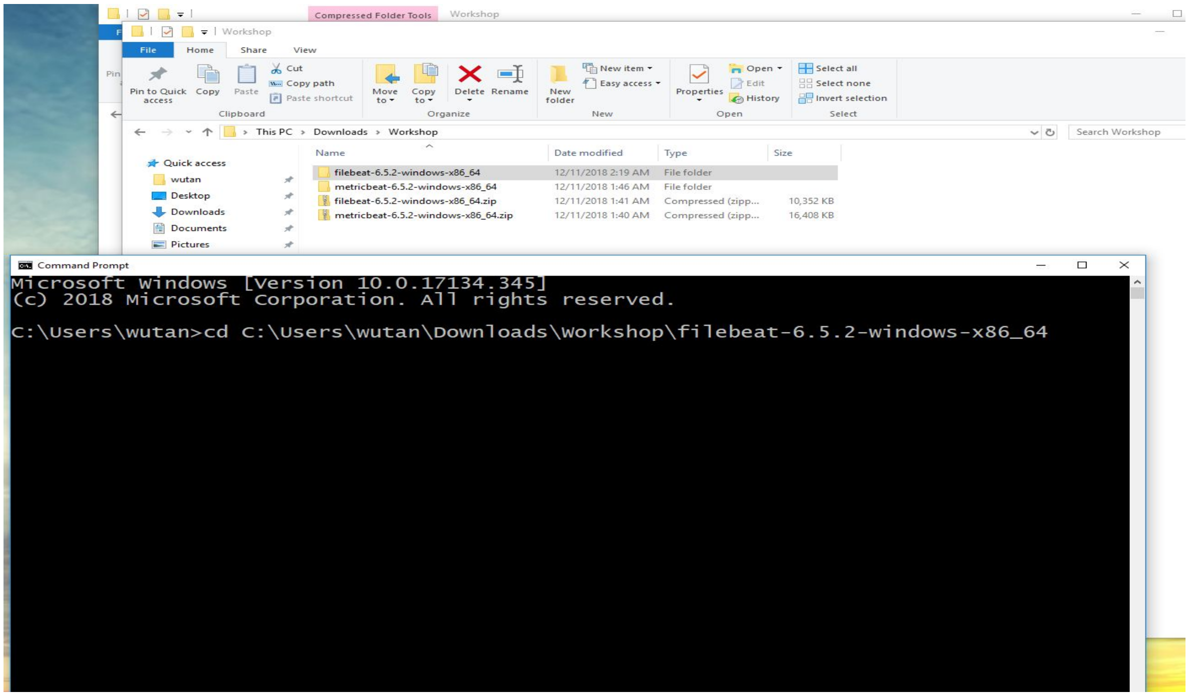


Name	Date modified	Type	Size
filebeat-6.5.2-windows-x86_64.zip	12/11/2018 1:41 AM	Compressed (zipp...	10,352 KB
metricbeat-6.5.2-windows-x86_64.zip	12/11/2018 1:40 AM	Compressed (zipp...	16,408 KB

2) Extract the file that you downloaded. (Your version of downloaded beat will be different than the screenshot below based on the latest version available at the time of download)



3) Open up a command prompt and type in `cd` (add a space after cd). Now drag-n-drop the extracted folder from step #2 to the command prompt window. Notice how it filled out the full path for you in the command prompt window? You can also type out the full path if you are a glutton for pain. Hit enter.

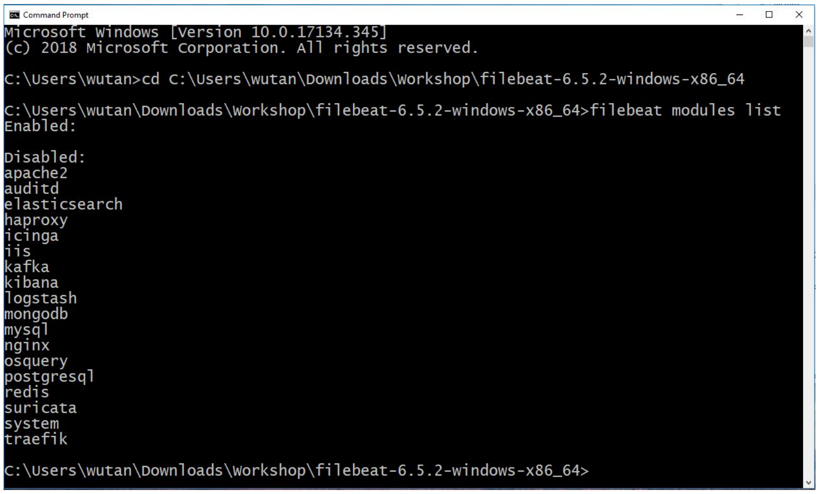


```
Microsoft Windows [Version 10.0.17134.345]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\wutan>cd C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64
```

4) List the modules that are available

```
.\filebeat.exe modules list
```

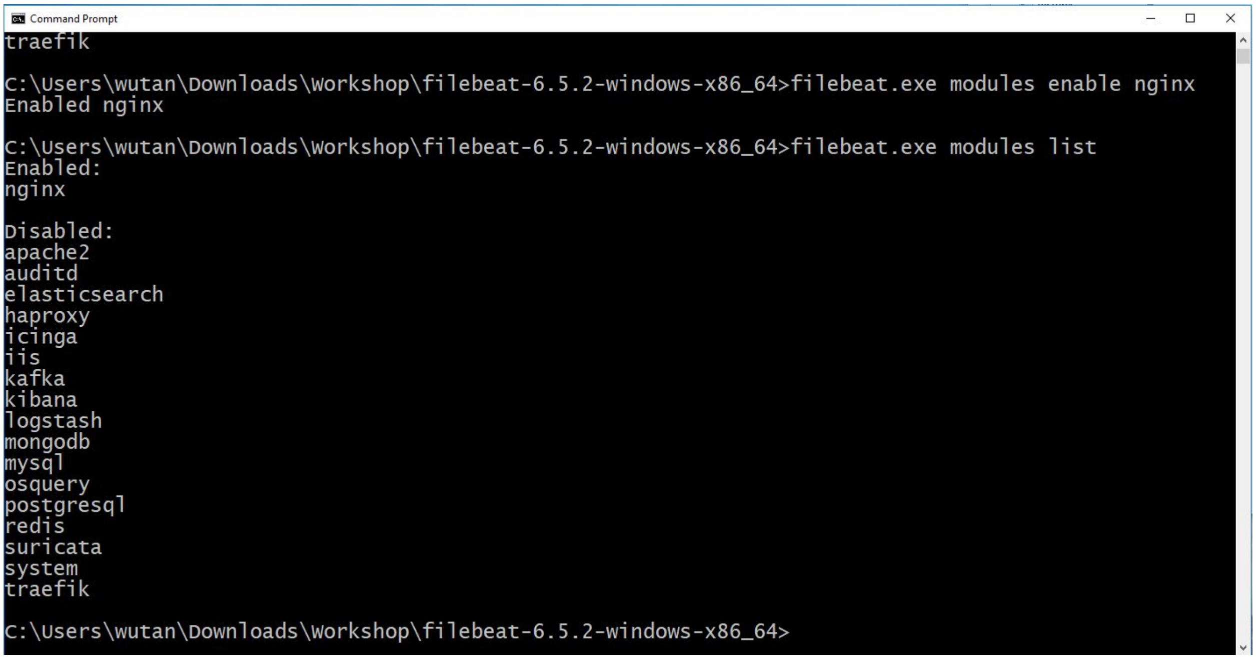
You should see which modules are ***enabled*** and which modules are ***disabled.*** Out of the box there are no modules enabled.



```
Microsoft Windows [Version 10.0.17134.345]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\wutan>cd C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64

C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64>filebeat modules list
Enabled:

Disabled:
apache2
auditd
elasticsearch
haproxy
icinga
iis
kafka
kibana
logstash
mongodb
mysql
nginx
osquery
postgresql
redis
suricata
system
traefik

C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64>
```

5) Now let us enable the NGINX module so we can ingest NGINX logs

```
.\filebeat.exe modules enable nginx
```



```
traefik

C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64>filebeat.exe modules enable nginx
Enabled nginx

C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64>filebeat.exe modules list
Enabled:
nginx

Disabled:
apache2
auditd
elasticsearch
haproxy
icinga
iis
kafka
kibana
logstash
mongodb
mysql
osquery
postgresql
redis
suricata
system
traefik

C:\Users\wutan\Downloads\Workshop\filebeat-6.5.2-windows-x86_64>
```

6) Before we setup Elasticsearch to accept NGINX logs we need to tell Filebeat where Elasticsearch is and provide credentials to login. We do this by editing the configuration file for Filebeat called filebeat.yml.

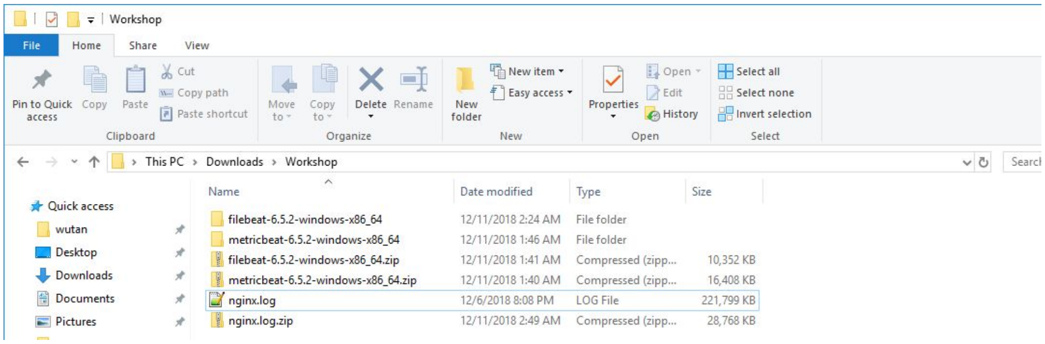
7) Follow the exact same procedure as you did when you setup Metricbeat and add the **cloud.id** and **cloud.auth** for your cluster filebeat.yml using the values from Lab 1.

```
cloud.id: "change-this-to-your-cloud-id"

cloud.auth: "elastic:change-this-to-your-deployment-password"
```

8) Since we don't actually have NGINX installed on our machine we are going to copy some real NGINX log files to the filesystem and tell the NGINX module where they are located.

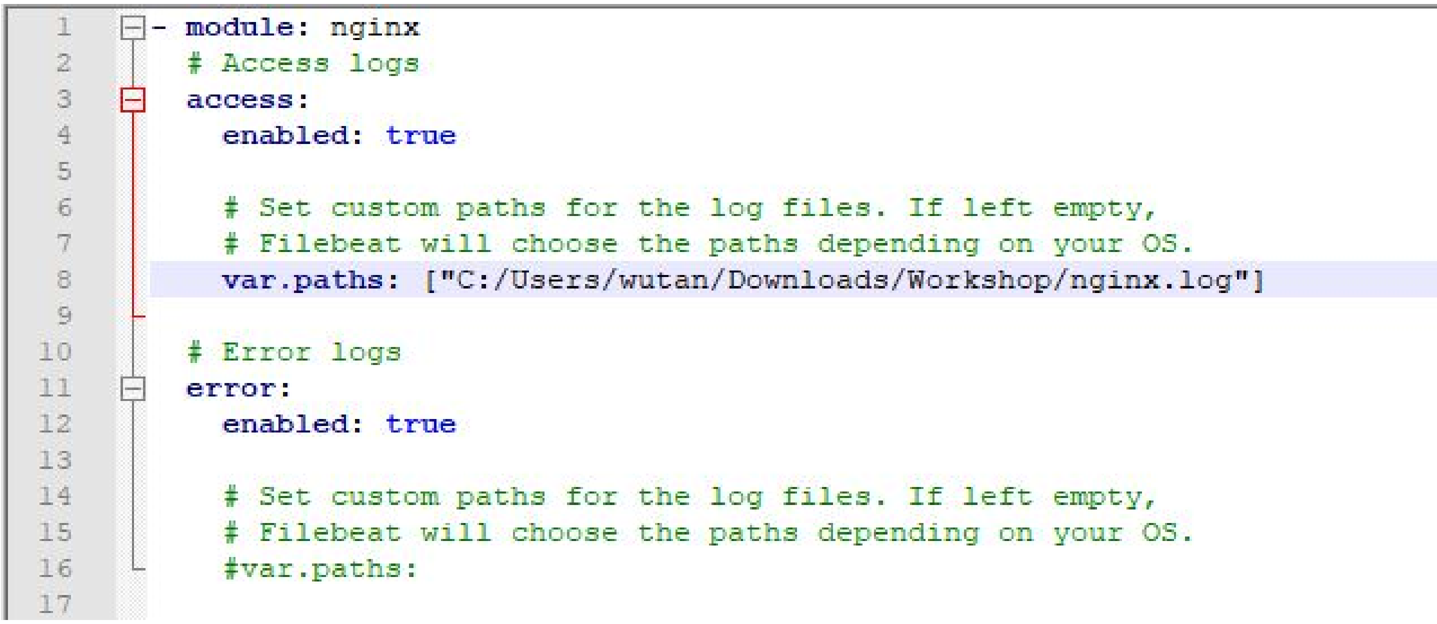
Download the NGINX logs from the following URL and extract the log file:

[Sample NGINX Logs]



Name	Date modified	Type	Size
filebeat-6.5.2-windows-x86_64	12/11/2018 2:24 AM	File folder	
metricbeat-6.5.2-windows-x86_64	12/11/2018 1:46 AM	File folder	
filebeat-6.5.2-windows-x86_64.zip	12/11/2018 1:41 AM	Compressed (zipp...	10,352 KB
metricbeat-6.5.2-windows-x86_64.zip	12/11/2018 1:40 AM	Compressed (zipp...	16,408 KB
nginx.log	12/6/2018 8:08 PM	LOG File	221,799 KB
nginx.log.zip	12/11/2018 2:49 AM	Compressed (zipp...	28,768 KB

9) In your text editor, open the nginx.yml file under modules.d directory (this exists in the extracted filebeat-.../modules.d/nginx.yml directory. Add the following configuration to the nginx.yml file under the **Access Logs** configuration block (not the **Error Logs**)



```
- module: nginx
  # Access logs
  access:
    enabled: true

    # Set custom paths for the log files. If left empty,
    # Filebeat will choose the paths depending on your OS.
    var.paths: ["C:/Users/wutan/Downloads/Workshop/nginx.log"]

  # Error logs
  error:
    enabled: true

    # Set custom paths for the log files. If left empty,
    # Filebeat will choose the paths depending on your OS.
    #var.paths:

```

- **Change all backslashes in your Windows path to forward slashes**
- **Use the directory you expanded the NGINX log file to**

11) Now we are ready to setup Elasticsearch to receive the NGINX logs, visualize it, and create Machine Learning jobs to detect anomalies. Go one level above modules.d directory (filebeat-.... directory). Fortunately it only takes 2 commands, this first to setup the module like we did for Metricbeat and the second to start Filebeat.

```
cd ..
.\filebeat.exe setup
.\filebeat.exe -e
```

Mac/Linux Instructions

Metricbeat

1) Open a terminal and navigate to the location that you downloaded metricbeat to

```
cd ~/Downloads/
```

2) Expand the file that you downloaded:

```
tar -zxvf metricbeat-<version>-x86_64.tar.gz
```

3) Change directory into the metricbeat

```
cd metricbeat-<version>-x86_64
```

4) List models that are available

```
./metricbeat modules list
```

You should see which modules are ***enabled*** and which modules are ***disabled.*** Out of the box the **system** module is the only one that is enabled.

(Elastic actively adds modules to the beats in new versions to make the ingestion easier, the list of modules in the version you downloaded might be different)

5) Before we setup Elasticsearch to accept system metrics we need to tell Metricbeat where Elasticsearch is and provide credentials to login. We do this by editing the configuration file for Metricbeat called metricbeat.yml.

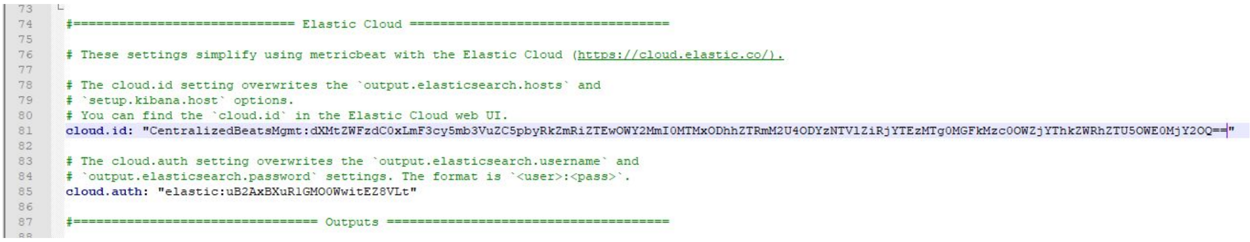
YAML files don't like hard tabs Do not use them if you are editing a .yml file because they will cause errors. To learn more about .yml files see this link: https://en.wikipedia.org/wiki/YAML

To start with, instead of sending metrics from your laptop to the cluster you have created in Lab 1, we are going to first send it to a shared Elasticsearch cluster created by the instructor. It will be used to demonstrate Kibana Infrastructure UI and also mimics a more realistic scenario - multiple endpoints sending metrics to single Elasticsearch Cluster.

Use your favorite text editor to open metricbeat.yml and replace **cloud.id** and **cloud.auth** with the following values:

```
cloud.id:
"observability_workshop:dXMtd2VzdDEuZ2NwLmNsb3VkLmVzLmlvJDAzN2NhZDU4M2ZiMTRkYTc4MGUzYTE2NjA3OGU0OTc5JDdiZDg5MWFhOGJhMDQ1NzFiMzg4N2ZkMDAzYjE2MWYz"
cloud.auth: "elastic:ncyRLYhJAl8akCSZLYBnBlED"
```

Example:



```
#============================== Elastic Cloud ==================================

# These settings simplify using metricbeat with the Elastic Cloud (https://cloud.elastic.co/).

# The cloud.id setting overwrites the `output.elasticsearch.hosts` and
# `setup.kibana.host` options.
# You can find the `cloud.id` in the Elastic Cloud web UI.
cloud.id: "CentralizedBeatsMgmt:dXMtZWFzdC0xLmF3cy5mb3VuZC5pbyRkZmRiZTEwOWY2MmI0MTMxODhhZTRmM2U4ODYzNTVlZiRjYTEzMTg0MGFkMzc0OWZjYThkZWRhZTU5OWE0MjY2OQ=="

# The cloud.auth setting overwrites the `output.elasticsearch.username` and
# `output.elasticsearch.password` settings. The format is `<user>:<pass>`.
cloud.auth: "elastic:uB2AxBXuR1GMO0WwitEZ8VLt"

#================================ Outputs =====================================
```

It’s very common that a copy paste from above snippet may result in formatting issues in the file depending on your editor. A good sign is what you copied and pasted ended up in multiple lines. If you notice errors about “Error in line…” after you run the commands that follow, it is probably because of a formatting error.

6) Run the following command to start sending the metrics information to centralized Elasticsearch cluster (step 5)

```
./metricbeat -e
```

At this point your system should show up on the Infrastructure UI instructor is sharing on projector.

7) **IMPORTANT:**After you saw your system show up on Infrastructure UI of the common cluster, change the ***cloud.id*** and ***cloud.auth*** values back to the ones for your Elasticsearch deployment you created in Lab 1

Now we are ready to setup your Elastic deployment to receive the system metric data, visualize it, and create Machine Learning jobs to detect anomalies. Fortunately it only takes 2 commands! The first command sets up the system Metricbeat module in Elasticsearch and Kibana (index templates, dashboards, ML jobs etc), this only needs to be run once across all your Metricbeat installs, the second command starts Metricbeat.

```
./metricbeat setup
./metricbeat -e
```

Filebeat

1) Open a terminal and navigate to the location that you downloaded filebeat to

```
cd ~/Downloads/
```

2) Expand the file that you downloaded:

```
tar -zxvf filebeat-<version>-x86_64.tar.gz
```

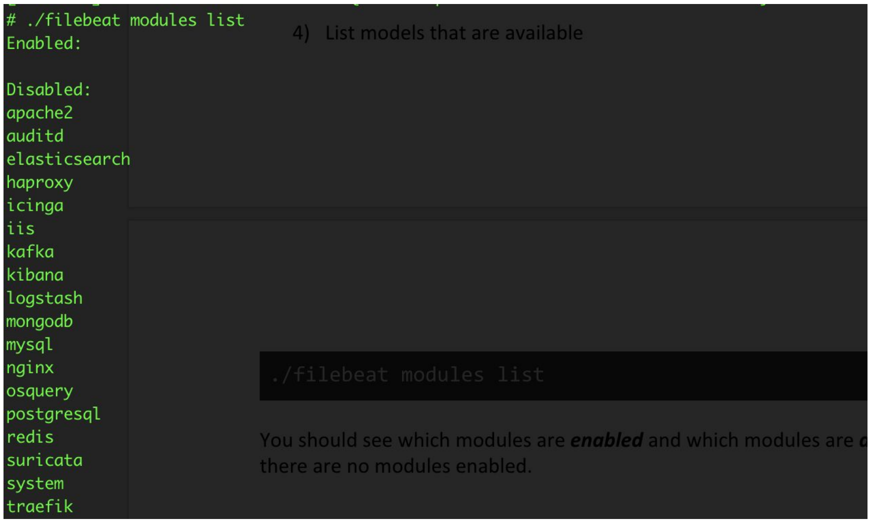
3) Change directory into the filebeat

```
cd filebeat-<version>-x86_64
```

4) List the modules that are available

```
./filebeat modules list
```

You should see which modules are ***enabled*** and which modules are ***disabled.*** Out of the box there are no modules enabled.



```
# ./filebeat modules list
Enabled:

Disabled:
apache2
auditd
elasticsearch
haproxy
icinga
iis
kafka
kibana
logstash
mongodb
mysql
nginx
osquery
postgresql
redis
suricata
system
traefik
```

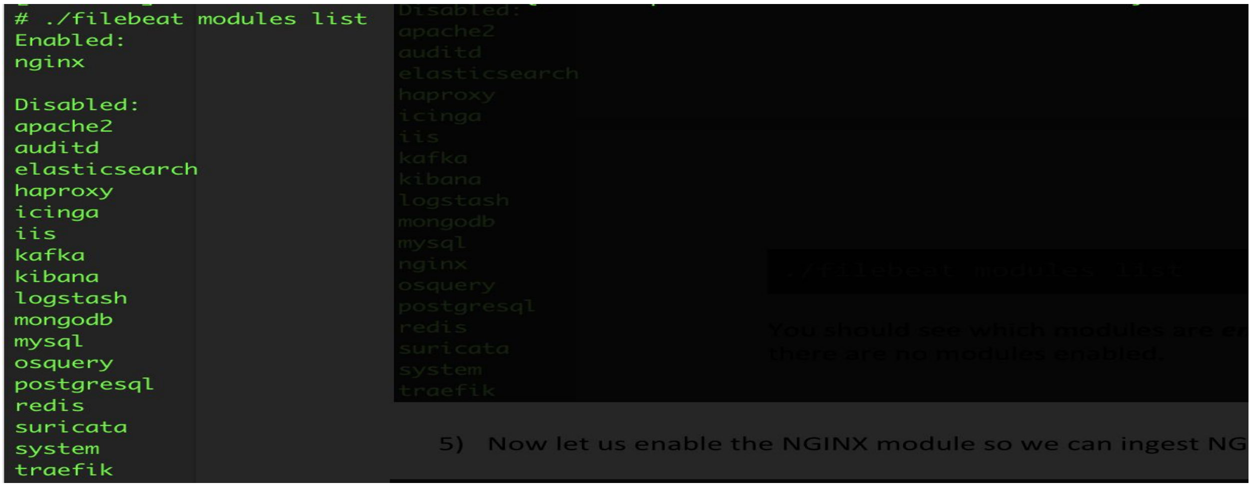
4) List models that are available

```
./filebeat modules list
```

You should see which modules are *enabled* and which modules are
there are no modules enabled.

5) Now let us enable the NGINX module so we can ingest NGINX logs

```
./filebeat modules enable nginx
```



```
# ./filebeat modules list
Enabled:
nginx

Disabled:
apache2
auditd
elasticsearch
haproxy
icinga
iis
kafka
kibana
logstash
mongodb
mysql
osquery
postgresql
redis
suricata
system
traefik
```

5) Now let us enable the NGINX module so we can ingest NG

6) Before we setup Elasticsearch to accept NGINX logs we need to tell Filebeat where Elasticsearch is and provide credentials to login. We do this by editing the configuration file for Filebeat called filebeat.yml.

7) Follow the exact same procedure as you did when you setup Metricbeat and add the **cloud.id** and **cloud.auth** for your cluster filebeat.yml using the values from Lab 1.

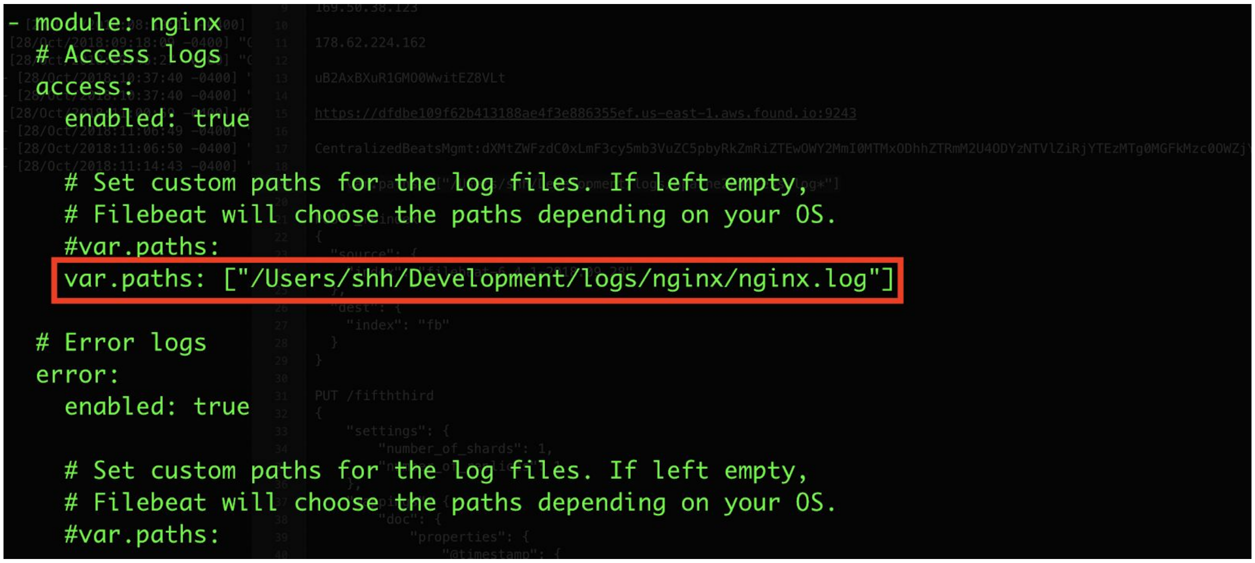
```
cloud.id: "change-this-to-your-cloud-id"

cloud.auth: "elastic:change-this-to-your-deployment-password"
```

8) Since we don’t actually have NGINX installed we are going to copy some real NGINX log files to the filesystem and tell the NGINX module where they are located.

Download the NGINX logs from the following URL and extract the log file:

Sample NGINX Logs

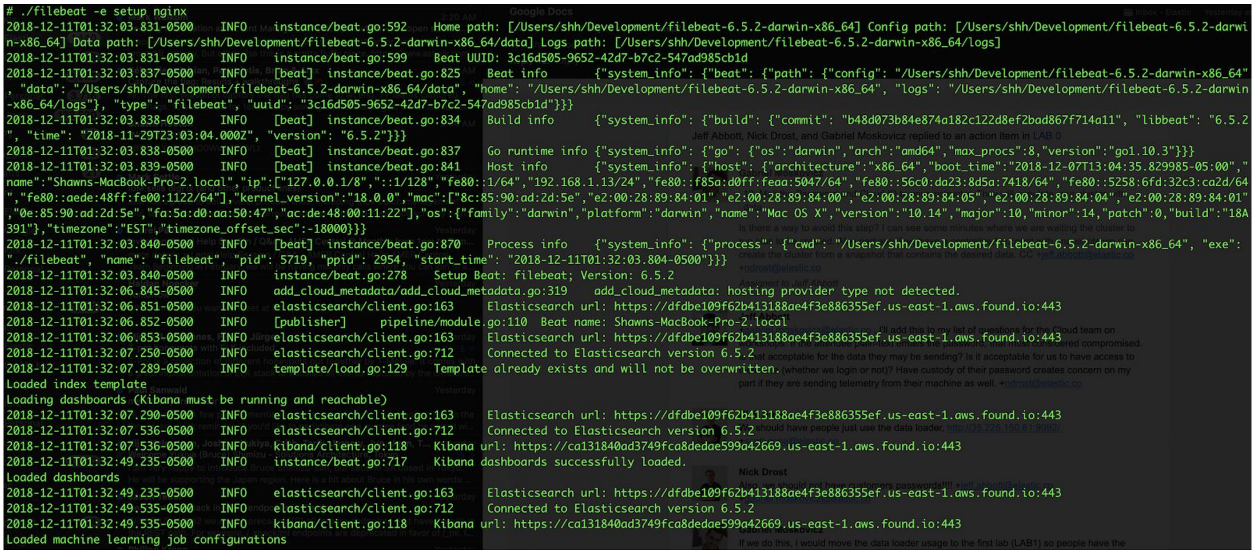
9) In your text editor, open the nginx.yml file under modules.d directory (this exists in the extracted filebeat-…/modules.d/nginx.yml directory. Add the following configuration to the nginx.yml file under the **Access Logs** configuration block (not the **Error Logs**).



```
- module: nginx
  # Access logs
  access:
    enabled: true

    # Set custom paths for the log files. If left empty,
    # Filebeat will choose the paths depending on your OS.
    #var.paths:
    var.paths: ["/Users/shh/Development/logs/nginx/nginx.log"]

  # Error logs
  error:
    enabled: true

    # Set custom paths for the log files. If left empty,
    # Filebeat will choose the paths depending on your OS.
    #var.paths:
```

11) Now we are ready to setup Elasticsearch to receive the NGINX logs, visualize it, and create Machine Learning jobs to detect anomalies. Go one level above modules.d directory (filebeat-…. directory). Fortunately it only takes 2 commands, this first to setup the module like we did for Metricbeat and the second to start Filebeat.

```
./filebeat setup
./filebeat -e
```



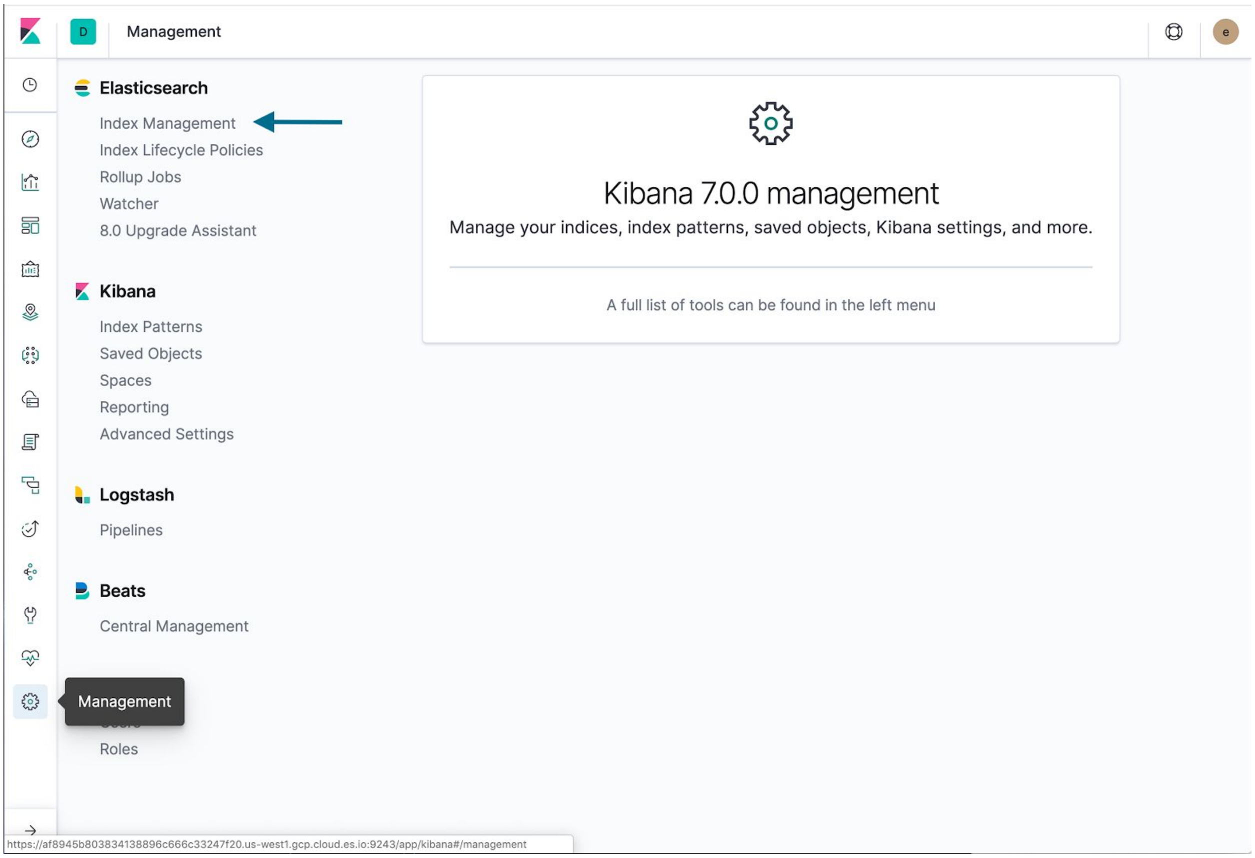
```
# ./filebeat -e setup nginx
2018-12-11T01:32:03.831-0500    INFO    instance/beat.go:592    Home path: [/Users/shh/Development/filebeat-6.5.2-darwin-x86_64] Config path: [/Users/shh/Development/filebeat-6.5.2-darwi
n-x86_64] Data path: [/Users/shh/Development/filebeat-6.5.2-darwin-x86_64/data] Logs path: [/Users/shh/Development/filebeat-6.5.2-darwin-x86_64/logs]
2018-12-11T01:32:03.831-0500    INFO    instance/beat.go:599    Beat UUID: 3c16d505-9652-42d7-b7c2-547ad985cb1d
2018-12-11T01:32:03.837-0500    INFO    [beat]  instance/beat.go:825    Beat info       {"system_info": {"beat": {"path": {"config": "/Users/shh/Development/filebeat-6.5.2-darwin-x86_64"
, "data": "/Users/shh/Development/filebeat-6.5.2-darwin-x86_64/data", "home": "/Users/shh/Development/filebeat-6.5.2-darwin-x86_64", "logs": "/Users/shh/Development/filebeat-6.5.2-darwin
-x86_64/logs"}, "type": "filebeat", "uuid": "3c16d505-9652-42d7-b7c2-547ad985cb1d"}}}
2018-12-11T01:32:03.838-0500    INFO    [beat]  instance/beat.go:834    Build info      {"system_info": {"build": {"commit": "b48d073b84e874a182c122d8ef2bad867f714a11", "libbeat": "6.5.2
", "time": "2018-11-29T23:03:04.000Z", "version": "6.5.2"}}}
2018-12-11T01:32:03.838-0500    INFO    [beat]  instance/beat.go:837    Go runtime info {"system_info": {"go": {"os":"darwin","arch":"amd64","max_procs":8,"version":"go1.10.3"}}}
2018-12-11T01:32:03.839-0500    INFO    [beat]  instance/beat.go:841    Host info       {"system_info": {"host": {"architecture":"x86_64","boot_time":"2018-12-07T13:04:35.829985-05:00","
name":"Shawns-MacBook-Pro-2.local","ip":["127.0.0.1/8","::1/128","fe80::1/64","192.168.1.13/24","fe80::f85a:d0ff:feaa:5047/64","fe80::56c0:da23:8d5a:7418/64","fe80::5258:6fd:32c3:ca2d/64
","fe80::aede:48ff:fe00:1122/64"],"kernel_version":"18.0.0","mac":["8c:85:90:ad:2d:5e","e2:00:28:89:84:01","e2:00:28:89:84:00","e2:00:28:89:84:05","e2:00:28:89:84:04","e2:00:28:89:84:01"
,"0e:85:90:ad:2d:5e","fa:5a:d0:aa:50:47","ac:de:48:00:11:22"],"os":{"family":"darwin","platform":"darwin","name":"Mac OS X","version":"10.14","major":10,"minor":14,"patch":0,"build":"18A
391"},"timezone":"EST","timezone_offset_sec":-18000}}}
2018-12-11T01:32:03.840-0500    INFO    [beat]  instance/beat.go:870    Process info    {"system_info": {"process": {"cwd": "/Users/shh/Development/filebeat-6.5.2-darwin-x86_64", "exe":
"./filebeat", "name": "filebeat", "pid": 5719, "ppid": 2954, "start_time": "2018-12-11T01:32:03.804-0500"}}}
2018-12-11T01:32:03.840-0500    INFO    instance/beat.go:278    Setup Beat: filebeat; Version: 6.5.2
2018-12-11T01:32:06.845-0500    INFO    add_cloud_metadata/add_cloud_metadata.go:319    add_cloud_metadata: hosting provider type not detected.
2018-12-11T01:32:06.851-0500    INFO    elasticsearch/client.go:163     Elasticsearch url: https://dfdbe109f62b413188ae4f3e886355ef.us-east-1.aws.found.io:443
2018-12-11T01:32:06.852-0500    INFO    [publisher]     pipeline/module.go:110  Beat name: Shawns-MacBook-Pro-2.local
2018-12-11T01:32:06.853-0500    INFO    elasticsearch/client.go:163     Elasticsearch url: https://dfdbe109f62b413188ae4f3e886355ef.us-east-1.aws.found.io:443
2018-12-11T01:32:07.250-0500    INFO    elasticsearch/client.go:712     Connected to Elasticsearch version 6.5.2
2018-12-11T01:32:07.289-0500    INFO    template/load.go:129    Template already exists and will not be overwritten.
Loaded index template
Loading dashboards (Kibana must be running and reachable)
2018-12-11T01:32:07.290-0500    INFO    elasticsearch/client.go:163     Elasticsearch url: https://dfdbe109f62b413188ae4f3e886355ef.us-east-1.aws.found.io:443
2018-12-11T01:32:07.536-0500    INFO    elasticsearch/client.go:712     Connected to Elasticsearch version 6.5.2
2018-12-11T01:32:07.536-0500    INFO    kibana/client.go:118    Kibana url: https://ca131840ad3749fca8dedae599a42669.us-east-1.aws.found.io:443
2018-12-11T01:32:49.235-0500    INFO    instance/beat.go:717    Kibana dashboards successfully loaded.
Loaded dashboards
2018-12-11T01:32:49.235-0500    INFO    elasticsearch/client.go:163     Elasticsearch url: https://dfdbe109f62b413188ae4f3e886355ef.us-east-1.aws.found.io:443
2018-12-11T01:32:49.535-0500    INFO    elasticsearch/client.go:712     Connected to Elasticsearch version 6.5.2
2018-12-11T01:32:49.535-0500    INFO    kibana/client.go:118    Kibana url: https://ca131840ad3749fca8dedae599a42669.us-east-1.aws.found.io:443
Loaded machine learning job configurations
```

Validate Data in Kibana

At this point let's look at the data in Kibana by looking at the index.

1) Go to your Kibana (from your deployment in Lab 1)

2) Click on the Management App and then on Index Management



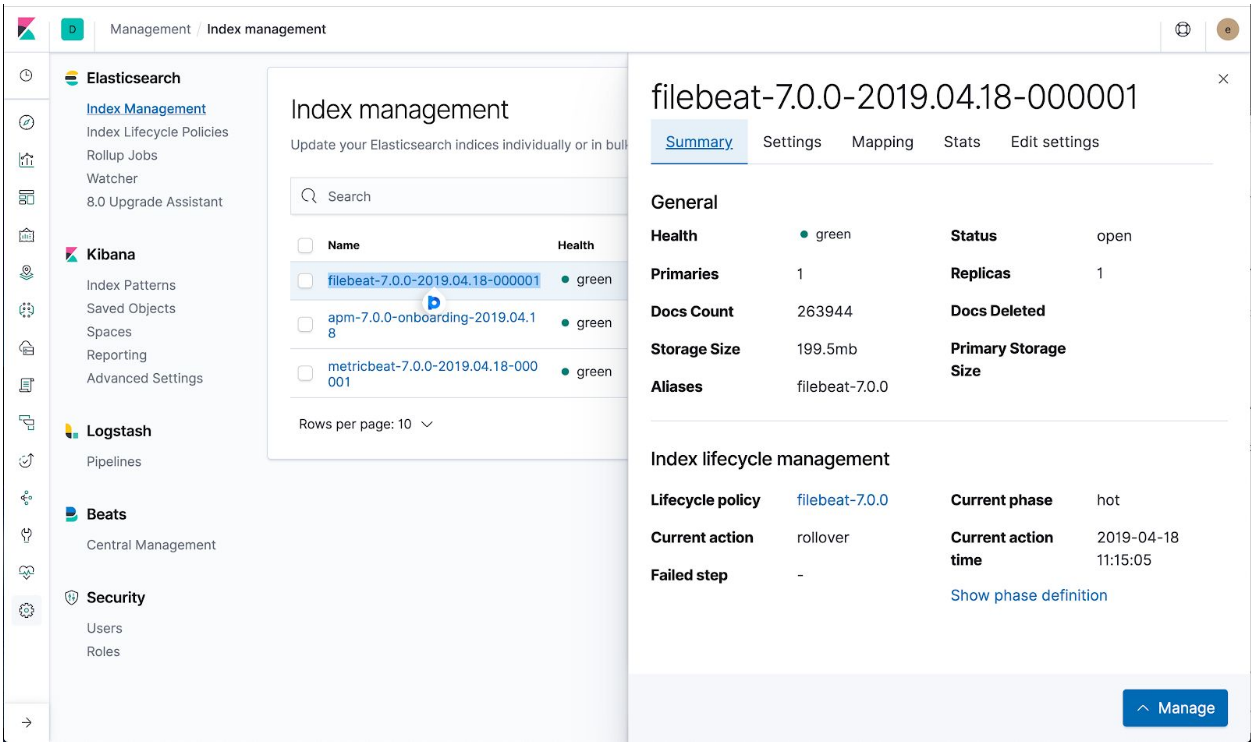
Kibana 7.0.0 management

Manage your indices, index patterns, saved objects, Kibana settings, and more.

A full list of tools can be found in the left menu

https://af8945b803834138896c666c33247f20.us-west1.gcp.cloud.es.io:9243/app/kibana#/management

3) Look for Indexes named filebeat-<version>-YYYY.MM.DD-000001 where version is the current version of the product and YYYY, MM, and DD represent the year, month, and day respectively. Examine Docs Count, Storage Size, and Primary Storage Size. Realistic data like this provides a wonderful opportunity to look at your data and how much disk space it consumes to help size your environment accurately.



Index management

Update your Elasticsearch indices individually or in bul

Search

Name	Health
filebeat-7.0.0-2019.04.18-000001	● green
apm-7.0.0-onboarding-2019.04.18	● green
metricbeat-7.0.0-2019.04.18-000001	● green

Rows per page: 10

filebeat-7.0.0-2019.04.18-000001

Summary | Settings | Mapping | Stats | Edit settings

General

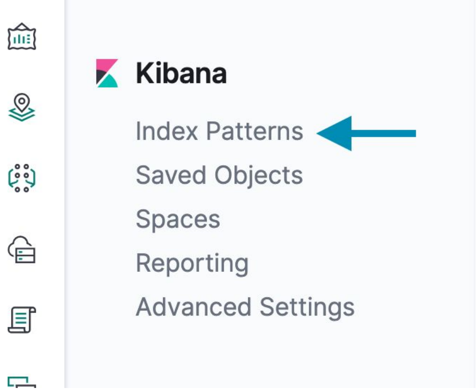
Health	● green	Status	open
Primaries	1	Replicas	1
Docs Count	263944	Docs Deleted	
Storage Size	199.5mb	Primary Storage Size	
Aliases	filebeat-7.0.0		

Index lifecycle management

Lifecycle policy	filebeat-7.0.0	Current phase	hot
Current action	rollover	Current action time	2019-04-18 11:15:05
Failed step	-		

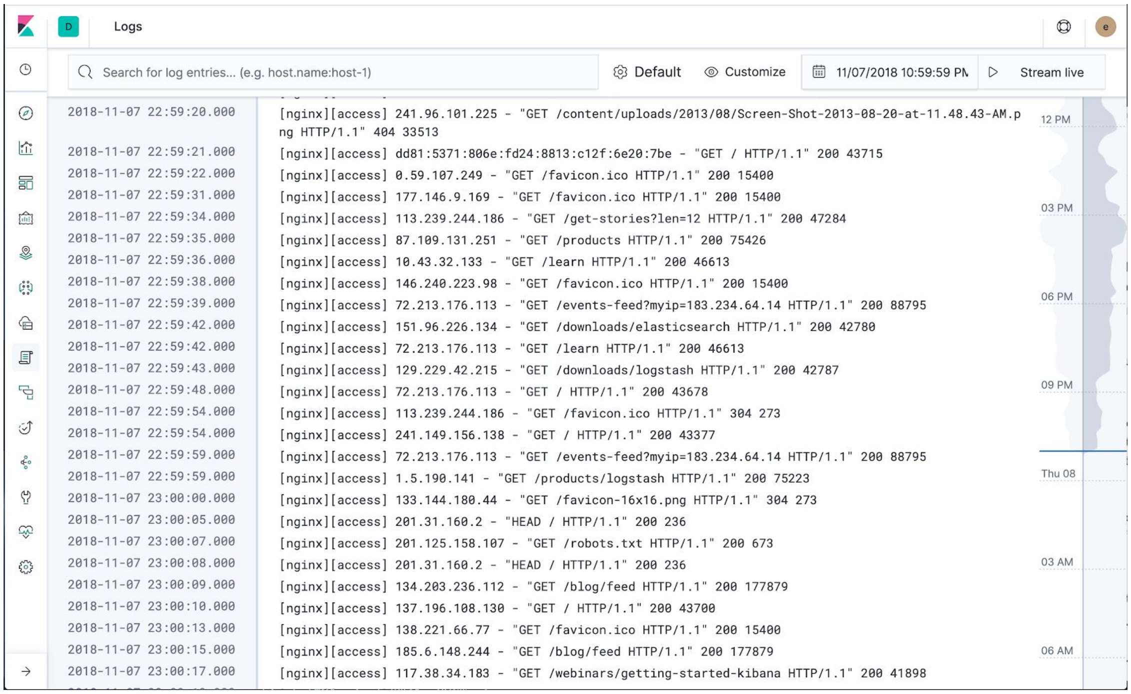
Show phase definition

4) Now click on the ”Index Patterns” link on the side navigation of the Management App. Index patterns tell Kibana which Elasticsearch indices you want to explore. An index pattern can match the name of a single index, or include a wildcard (*) to match multiple indices.



5) Now verify that metricbeat and filebeat index patterns exist. Notice the wildcard pattern. Examine the fields, notice the field data type, whether it is searchable and aggregatable.

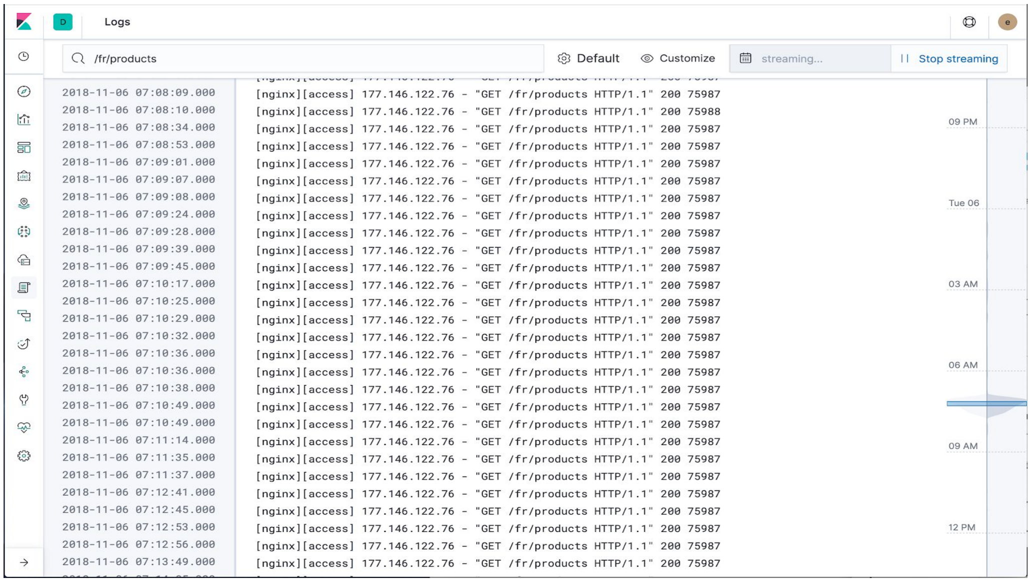
6) In Kibana click on “Logs App” item in the side navigation. The data that you see below is coming from filebeat-* indices.



```
2018-11-07 22:59:20.000   [nginx][access] 241.96.101.225 - "GET /content/uploads/2013/08/Screen-Shot-2013-08-20-at-11.48.43-AM.p
                          ng HTTP/1.1" 404 33513
2018-11-07 22:59:21.000   [nginx][access] dd81:5371:806e:fd24:8813:c12f:6e20:7be - "GET / HTTP/1.1" 200 43715
2018-11-07 22:59:22.000   [nginx][access] 0.59.107.249 - "GET /favicon.ico HTTP/1.1" 200 15400
2018-11-07 22:59:31.000   [nginx][access] 177.146.9.169 - "GET /favicon.ico HTTP/1.1" 200 15400
2018-11-07 22:59:34.000   [nginx][access] 113.239.244.186 - "GET /get-stories?len=12 HTTP/1.1" 200 47284
2018-11-07 22:59:35.000   [nginx][access] 87.109.131.251 - "GET /products HTTP/1.1" 200 75426
2018-11-07 22:59:36.000   [nginx][access] 10.43.32.133 - "GET /learn HTTP/1.1" 200 46613
2018-11-07 22:59:38.000   [nginx][access] 146.240.223.98 - "GET /favicon.ico HTTP/1.1" 200 15400
2018-11-07 22:59:39.000   [nginx][access] 72.213.176.113 - "GET /events-feed?myip=183.234.64.14 HTTP/1.1" 200 88795
2018-11-07 22:59:42.000   [nginx][access] 151.96.226.134 - "GET /downloads/elasticsearch HTTP/1.1" 200 42780
2018-11-07 22:59:42.000   [nginx][access] 72.213.176.113 - "GET /learn HTTP/1.1" 200 46613
2018-11-07 22:59:43.000   [nginx][access] 129.229.42.215 - "GET /downloads/logstash HTTP/1.1" 200 42787
2018-11-07 22:59:48.000   [nginx][access] 72.213.176.113 - "GET / HTTP/1.1" 200 43678
2018-11-07 22:59:54.000   [nginx][access] 113.239.244.186 - "GET /favicon.ico HTTP/1.1" 304 273
2018-11-07 22:59:54.000   [nginx][access] 241.149.156.138 - "GET / HTTP/1.1" 200 43377
2018-11-07 22:59:59.000   [nginx][access] 72.213.176.113 - "GET /events-feed?myip=183.234.64.14 HTTP/1.1" 200 88795
2018-11-07 22:59:59.000   [nginx][access] 1.5.190.141 - "GET /products/logstash HTTP/1.1" 200 75223
2018-11-07 23:00:00.000   [nginx][access] 133.144.180.44 - "GET /favicon-16x16.png HTTP/1.1" 304 273
2018-11-07 23:00:05.000   [nginx][access] 201.31.160.2 - "HEAD / HTTP/1.1" 200 236
2018-11-07 23:00:07.000   [nginx][access] 201.125.158.107 - "GET /robots.txt HTTP/1.1" 200 673
2018-11-07 23:00:08.000   [nginx][access] 201.31.160.2 - "HEAD / HTTP/1.1" 200 236
2018-11-07 23:00:09.000   [nginx][access] 134.203.236.112 - "GET /blog/feed HTTP/1.1" 200 177879
2018-11-07 23:00:10.000   [nginx][access] 137.196.108.130 - "GET / HTTP/1.1" 200 43700
2018-11-07 23:00:13.000   [nginx][access] 138.221.66.77 - "GET /favicon.ico HTTP/1.1" 200 15400
2018-11-07 23:00:15.000   [nginx][access] 185.6.148.244 - "GET /blog/feed HTTP/1.1" 200 177879
2018-11-07 23:00:17.000   [nginx][access] 117.38.34.183 - "GET /webinars/getting-started-kibana HTTP/1.1" 200 41898
```

7) In the top right corner click on “Stream live”. Notice how the screen starts to update as more logs flow into Elastic. This feature aims to simplify “tailing the log” experience.

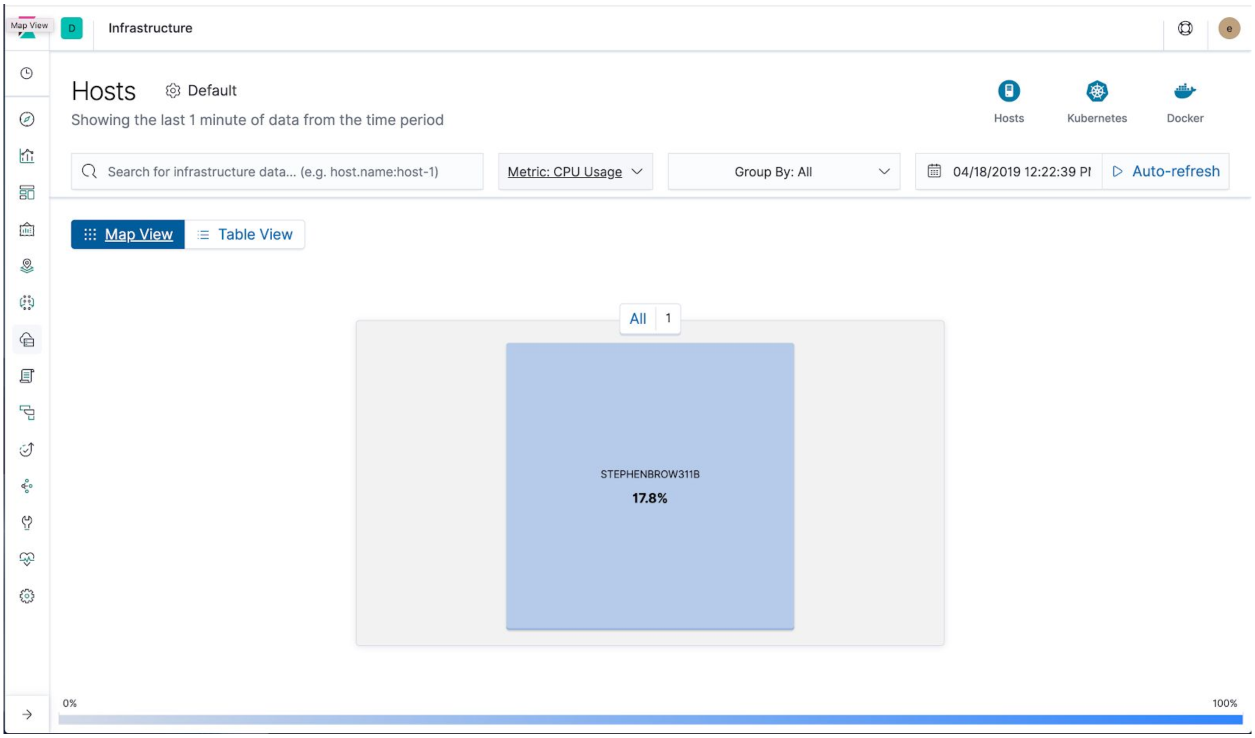
8) In the search bar search for “/fr/products“.
(Based on the WiFi speed the upload of logs to the Elasticsearch might be a little slow, give it a few minutes if you don’t see any results for /fr/products)



```
2018-11-06 07:08:09.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:08:10.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75988
2018-11-06 07:08:34.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:08:53.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:01.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:07.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:08.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:24.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:28.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:39.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:09:45.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:17.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:25.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:29.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:32.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:36.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:36.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:38.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:49.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:10:49.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:11:14.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:11:35.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:11:37.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:12:41.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:12:45.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:12:53.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:12:56.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
2018-11-06 07:13:49.000   [nginx][access] 177.146.122.76 - "GET /fr/products HTTP/1.1" 200 75987
```

This functionality is powered by a search engine (Elasticsearch) and search features are still available to you.

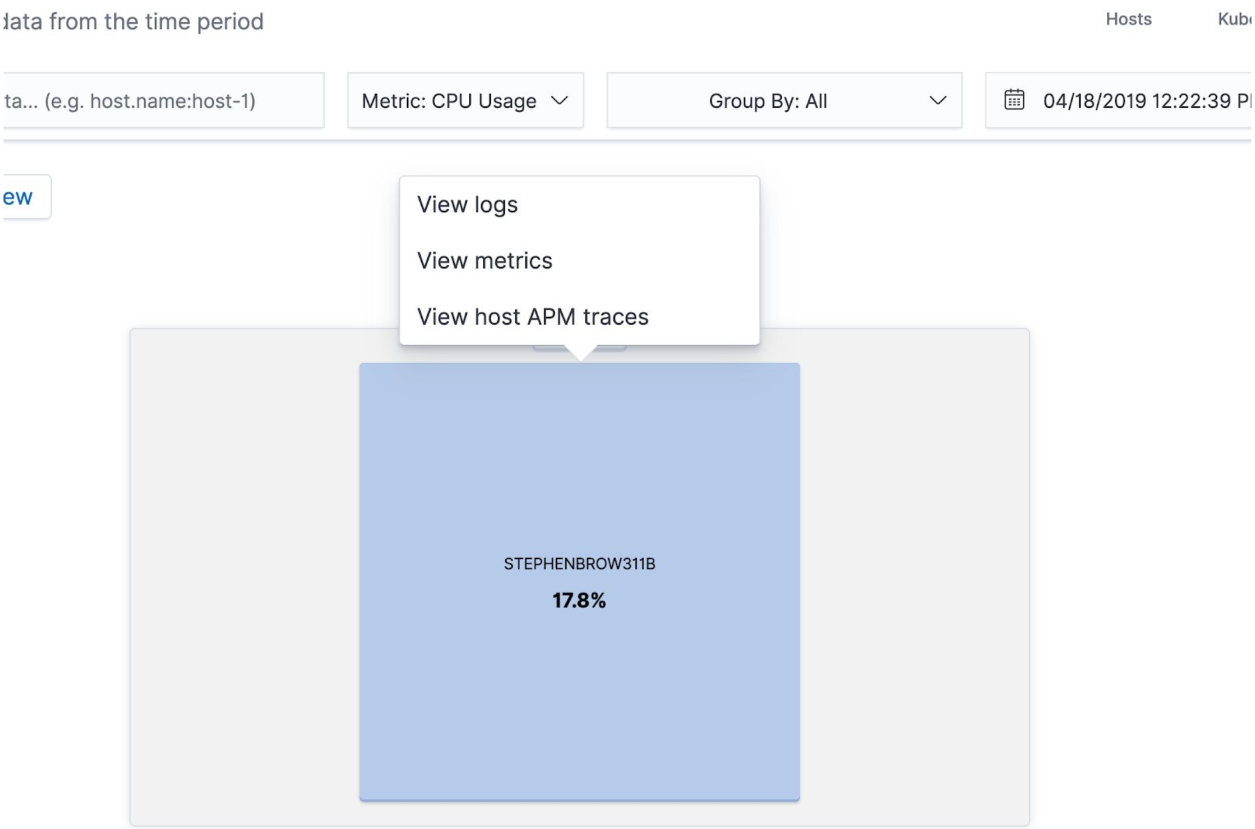
9) Now click on the “Infrastructure App” item in the side navigation.



At the moment you see metrics only from one host, but imagine this same view (showcased in the presentation slides and during the instructor’s demo) where you have multiple hosts monitored here on one screen.

10) Current metric displayed is CPU Usage. Click on the dropdown and select Memory Usage, Load, and other metrics. Note – you might not have data for everything, but this will give you an idea of what kind of metrics could drive the display of the screen.

11) Click on the host and then click on “View Metrics”. You will end up on the quick summary metrics screen for the host.



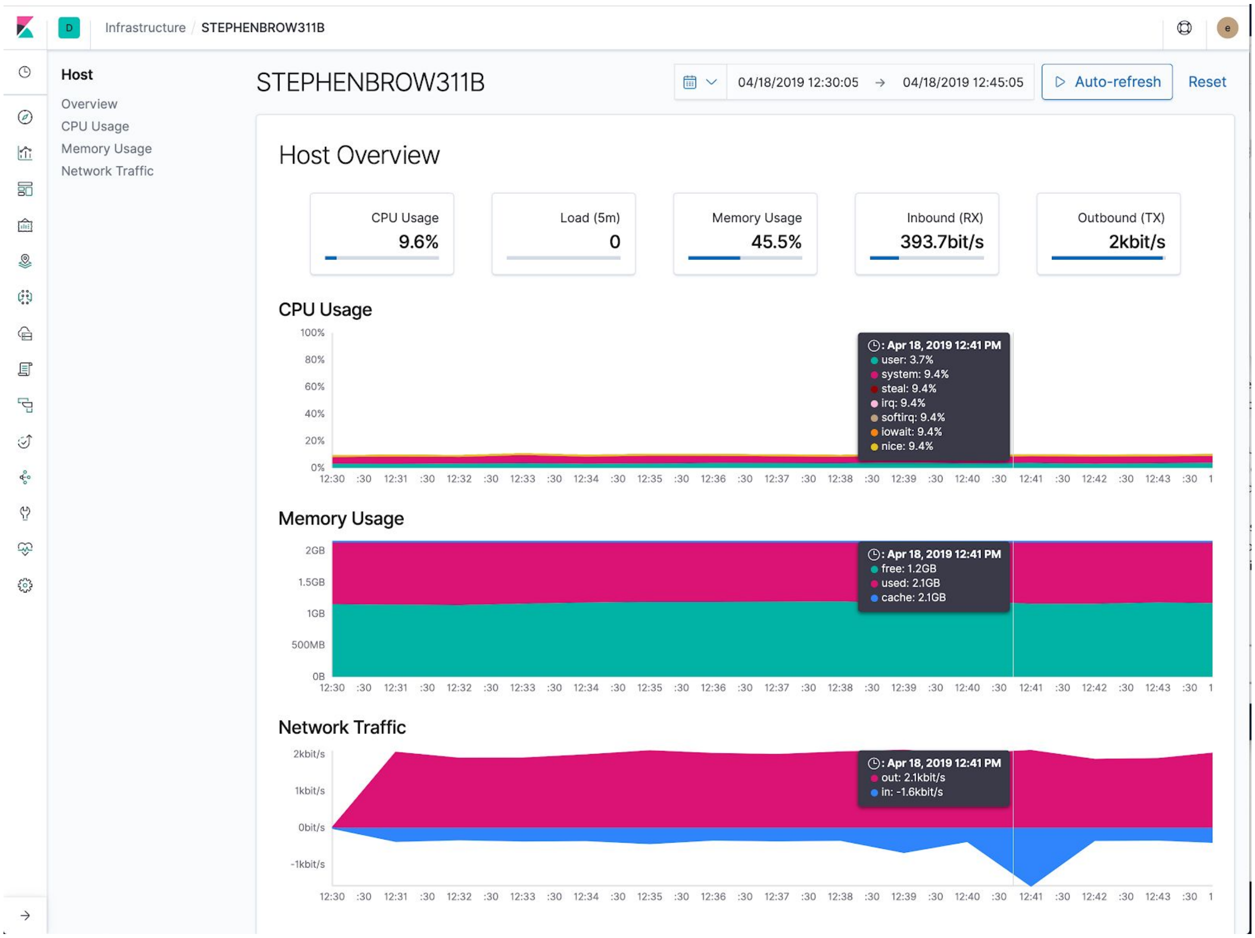
data from the time period

ta... (e.g. host.name:host-1)

Metric: CPU Usage

Group By: All

04/18/2019 12:22:39 P



Infrastructure / STEPHENBROW311B

STEPHENBROW311B

04/18/2019 12:30:05 → 04/18/2019 12:45:05

Host Overview

CPU Usage 9.6%

Load (5m) 0

Memory Usage 45.5%

Inbound (RX) 393.7bit/s

Outbound (TX) 2kbit/s

CPU Usage

: Apr 18, 2019 12:41 PM
user: 3.7%
system: 9.4%
steal: 9.4%
irq: 9.4%
softirq: 9.4%
iowait: 9.4%
nice: 9.4%

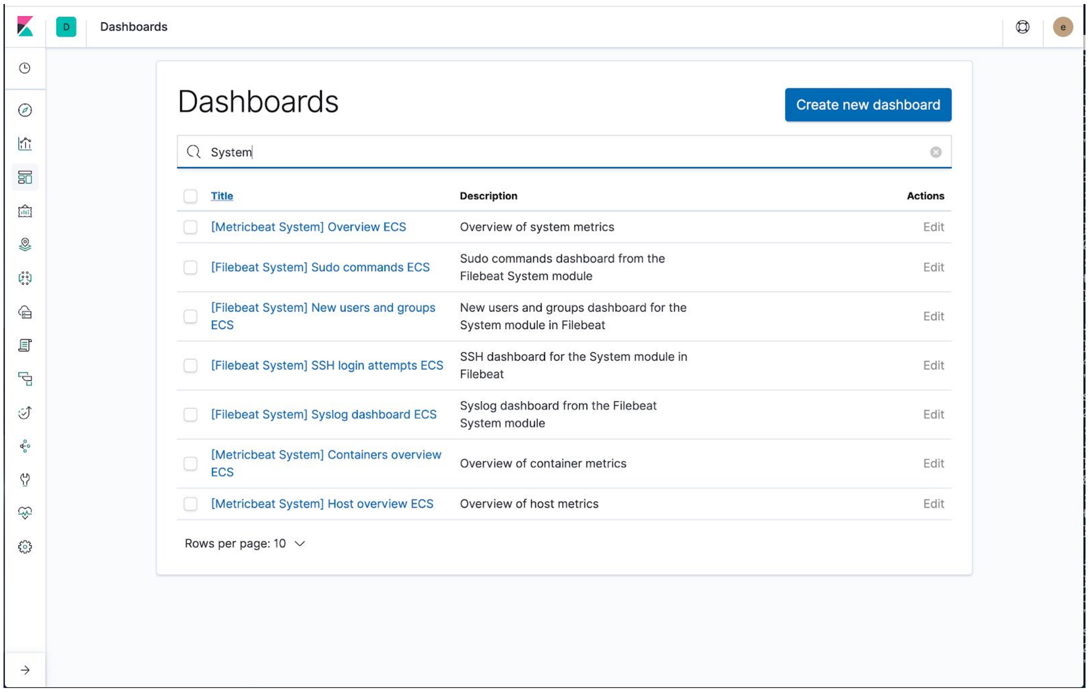
Memory Usage

: Apr 18, 2019 12:41 PM
free: 1.2GB
used: 2.1GB
cache: 2.1GB

Network Traffic

: Apr 18, 2019 12:41 PM
out: 2.1kbit/s
in: -1.6kbit/s

12) Now let’s take a look at the Dashboards that come OOB with Metricbeat and Filebeat. Click on Dashboards on the menu. A list with whole bunch of dashboards will display. Type in the search bar “System” and click on **[Metricbeat System] Host overview**. Make sure time picker in the top right corner is set for the “Last 15 min”.



Dashboards

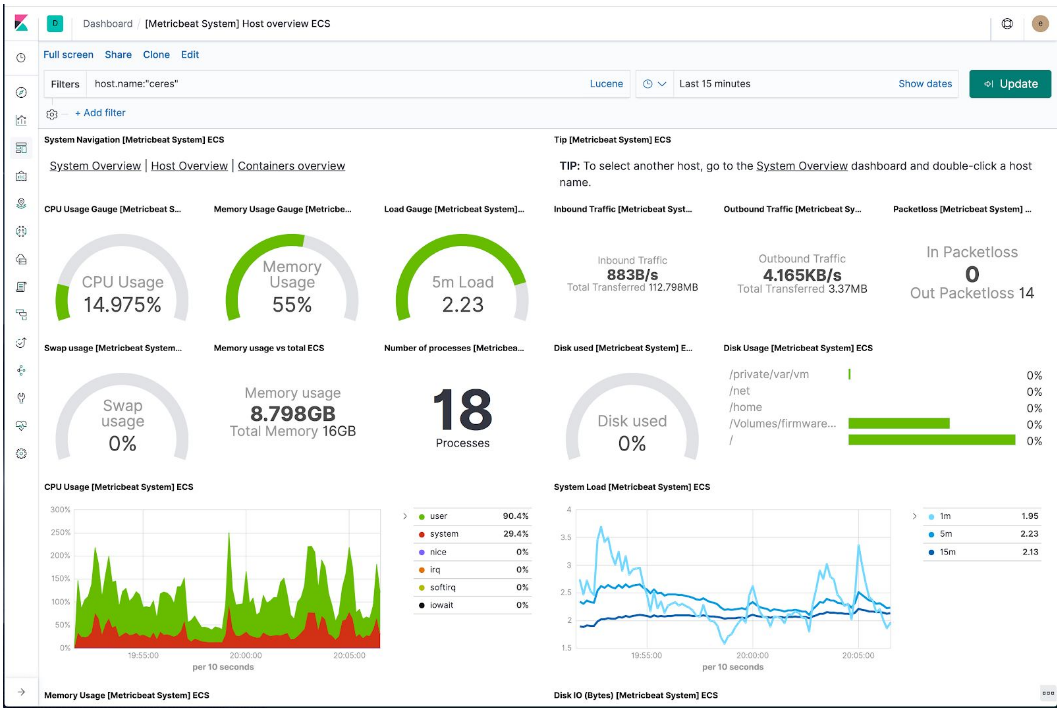
Dashboards

Create new dashboard

System

□	Title	Description	Actions
□	[Metricbeat System] Overview ECS	Overview of system metrics	Edit
□	[Filebeat System] Sudo commands ECS	Sudo commands dashboard from the Filebeat System module	Edit
□	[Filebeat System] New users and groups ECS	New users and groups dashboard for the System module in Filebeat	Edit
□	[Filebeat System] SSH login attempts ECS	SSH dashboard for the System module in Filebeat	Edit
□	[Filebeat System] Syslog dashboard ECS	Syslog dashboard from the Filebeat System module	Edit
□	[Metricbeat System] Containers overview ECS	Overview of container metrics	Edit
□	[Metricbeat System] Host overview ECS	Overview of host metrics	Edit

Rows per page: 10



Dashboard / [Metricbeat System] Host overview ECS

Full screen Share Clone Edit

Filters host.name:"ceres" Lucene

Last 15 minutes Show dates Update

+ Add filter

System Navigation [Metricbeat System] ECS

System Overview | Host Overview | Containers overview

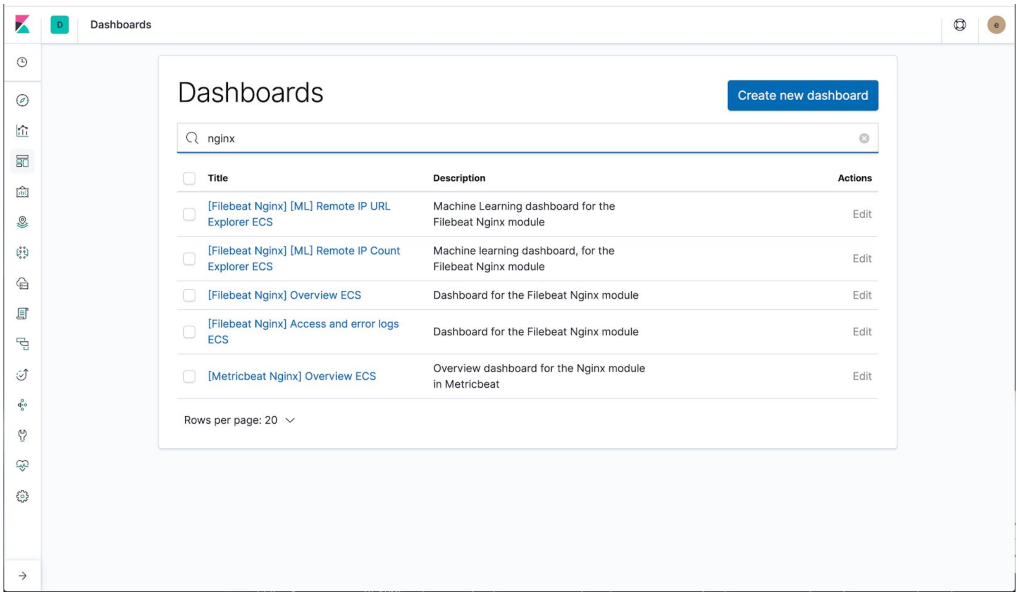
Tip [Metricbeat System] ECS

TIP: To select another host, go to the System Overview dashboard and double-click a host name.

CPU Usage Gauge [Metricbeat S...
CPU Usage 14.975%
Memory Usage Gauge [Metricbe...
Memory Usage 55%
Load Gauge [Metricbeat System]...
5m Load 2.23
Inbound Traffic [Metricbeat Syst...
Inbound Traffic 883B/s Total Transferred 112.798MB
Outbound Traffic [Metricbeat Sy...
Outbound Traffic 4.165KB/s Total Transferred 3.37MB
Packetloss [Metricbeat System] ...
In Packetloss 0 Out Packetloss 14
Swap usage [Metricbeat System...
Swap usage 0%
Memory usage vs total ECS
Memory usage 8.798GB Total Memory 16GB
Number of processes [Metricbea...
18 Processes
Disk used [Metricbeat System] E...
Disk used 0%
Disk Usage [Metricbeat System] ECS
/private/var/vm 0%
/net 0%
/home 0%
/Volumes/firmware... 0%
/ 0%
CPU Usage [Metricbeat System] ECS
300% 250% 200% 150% 100% 50% 0%
19:55:00 20:00:00 20:05:00
per 10 seconds
user 90.4%
system 29.4%
nice 0%
irq 0%
softirq 0%
iowait 0%
System Load [Metricbeat System] ECS
4 3.5 3 2.5 2 1.5
19:55:00 20:00:00 20:05:00
per 10 seconds
1m 1.95
5m 2.23
15m 2.13
Memory Usage [Metricbeat System] ECS
Disk IO (Bytes) [Metricbeat System] ECS

You end up on a dashboard that gives you complete metrics overview of the host where you have metricbeat running. Essentially with just running a few commands you're now able to collect the metrics and have and have a graphic representation of your computer's performance. Imagine running this at scale and having that same real time view of 100s of hosts

13) Click on Dashboard again. This time search for “Nginx”. Click on **[Filebeat Nginx] Overview** dashboard.


Dashboards

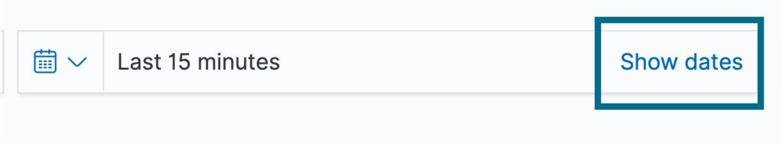
Create new dashboard

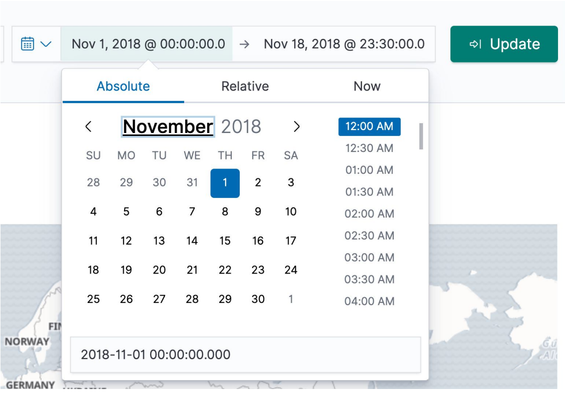
nginx

Title	Description	Actions
[Filebeat Nginx] [ML] Remote IP URL Explorer ECS	Machine Learning dashboard for the Filebeat Nginx module	Edit
[Filebeat Nginx] [ML] Remote IP Count Explorer ECS	Machine learning dashboard, for the Filebeat Nginx module	Edit
[Filebeat Nginx] Overview ECS	Dashboard for the Filebeat Nginx module	Edit
[Filebeat Nginx] Access and error logs ECS	Dashboard for the Filebeat Nginx module	Edit
[Metricbeat Nginx] Overview ECS	Overview dashboard for the Nginx module in Metricbeat	Edit

Rows per page: 20

When the dashboard opens up in Timepicker select “Show Dates” and the set option “Absolute” and set the “From” to Nov 1st 2018 and “To” to Nov 28th 2018.




Nov 1, 2018 @ 00:00:00.0 → Nov 18, 2018 @ 23:30:00.0 Update

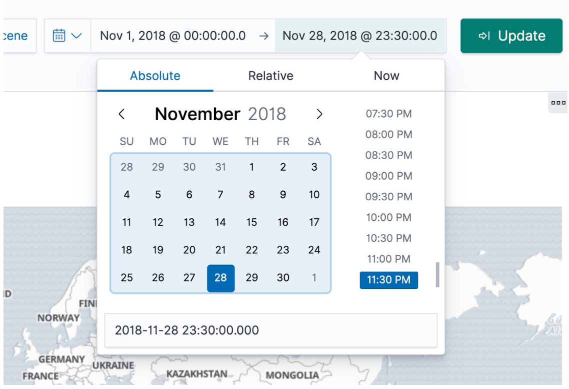
Absolute | Relative | Now

November 2018

SU	MO	TU	WE	TH	FR	SA
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

12:00 AM
12:30 AM
01:00 AM
01:30 AM
02:00 AM
02:30 AM
03:00 AM
03:30 AM
04:00 AM

2018-11-01 00:00:00.000


cene Nov 1, 2018 @ 00:00:00.0 → Nov 28, 2018 @ 23:30:00.0 Update

Absolute | Relative | Now

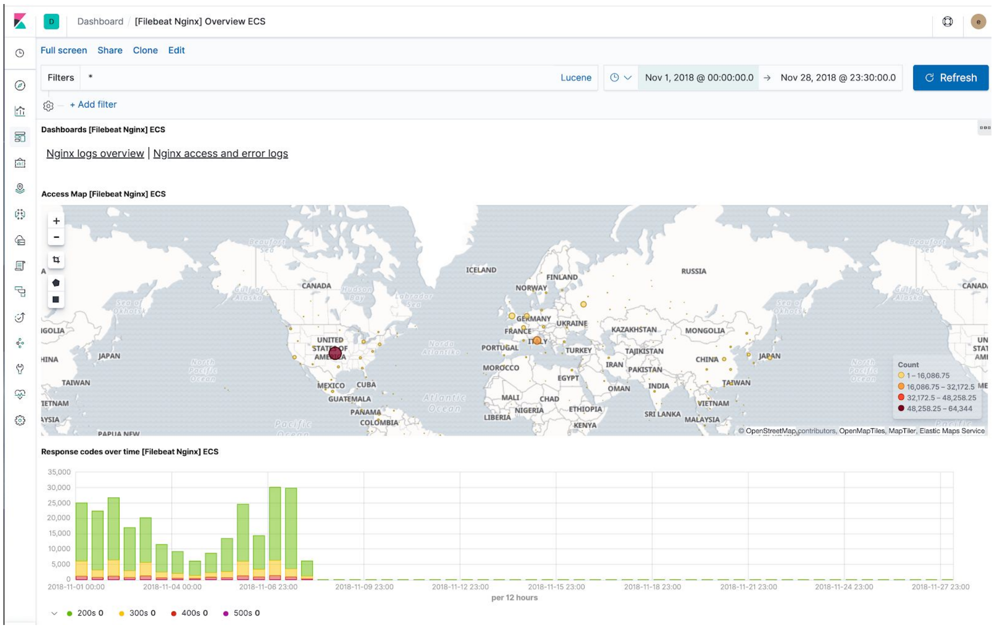
November 2018

SU	MO	TU	WE	TH	FR	SA
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

07:30 PM
08:00 PM
08:30 PM
09:00 PM
09:30 PM
10:00 PM
10:30 PM
11:00 PM
11:30 PM

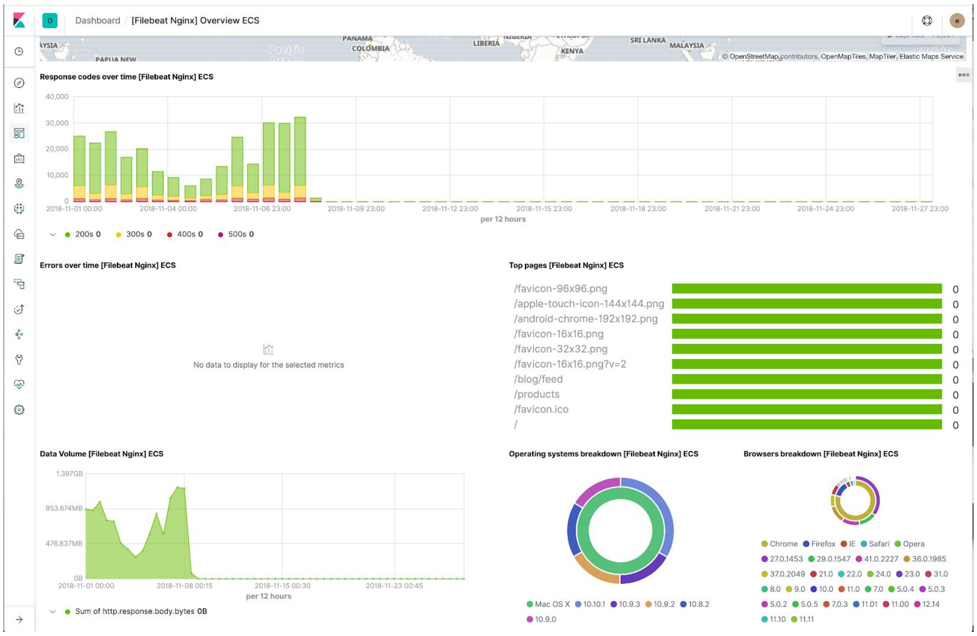
2018-11-28 23:30:00.000

You end up on a dashboard that looks like this:

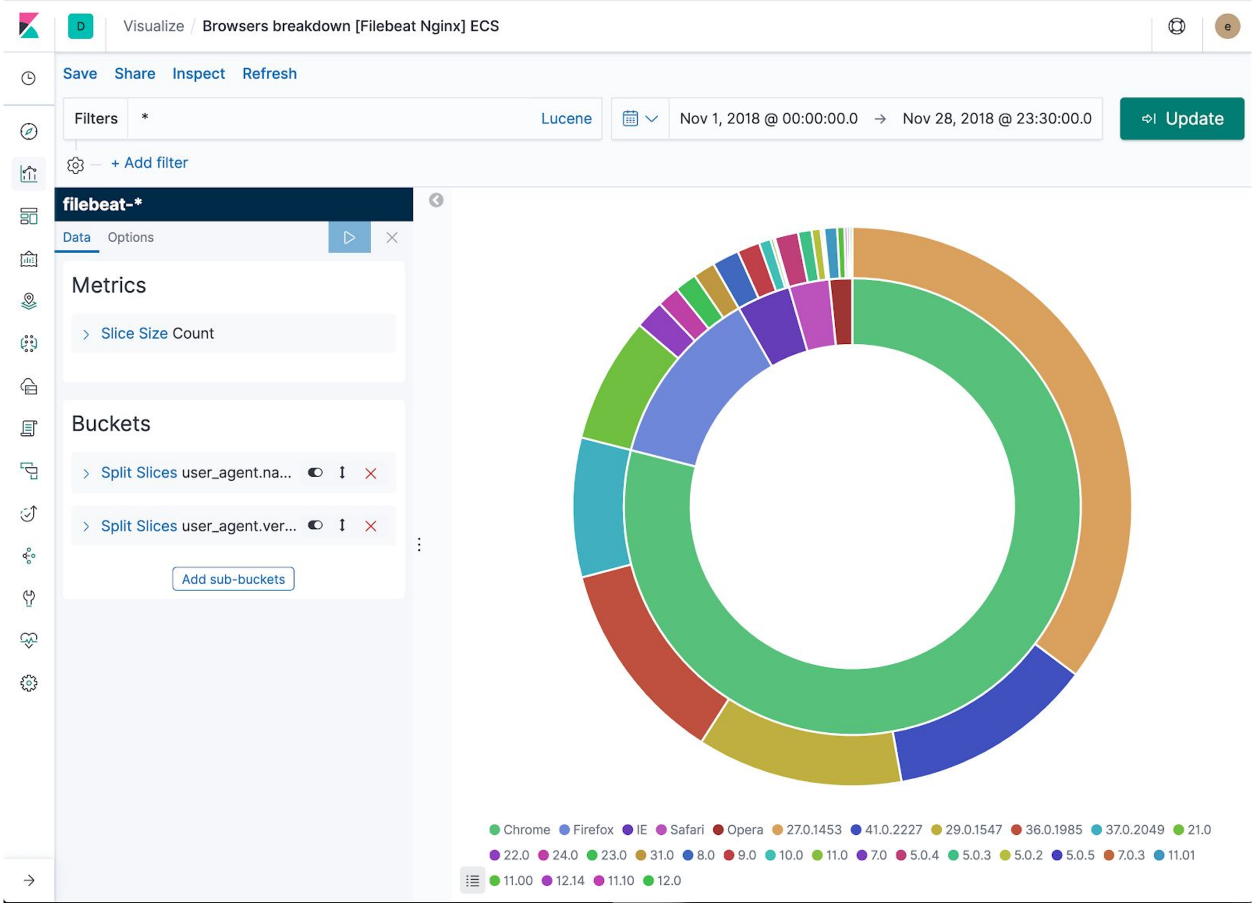


If you do not see the data all the way to November 28th it means it is still loading. Turn on Auto-Refresh (next to date picker) and see how your dashboards keeps updating in real time.

14) These dashboards are also a great example on how to build visualizations in Kibana. Feel free to click on “Edit” (next to Auto-Refresh option) and then edit a particular visualization to see how it was built.



Pie chart visualization:



D
Visualize / Browsers breakdown [Filebeat Nginx] ECS
Save
Share
Inspect
Refresh
Filters
*
Lucene
Nov 1, 2018 @ 00:00:00.0
→
Nov 28, 2018 @ 23:30:00.0
Update
+ Add filter
filebeat-*
Data
Options
Metrics
Slice Size Count
Buckets
Split Slices user_agent.na...
Split Slices user_agent.ver...
Add sub-buckets
Chrome
Firefox
IE
Safari
Opera
27.0.1453
41.0.2227
29.0.1547
36.0.1985
37.0.2049
21.0
22.0
24.0
23.0
31.0
8.0
9.0
10.0
11.0
7.0
5.0.4
5.0.3
5.0.2
5.0.5
7.0.3
11.01
11.00
12.14
11.10
12.0