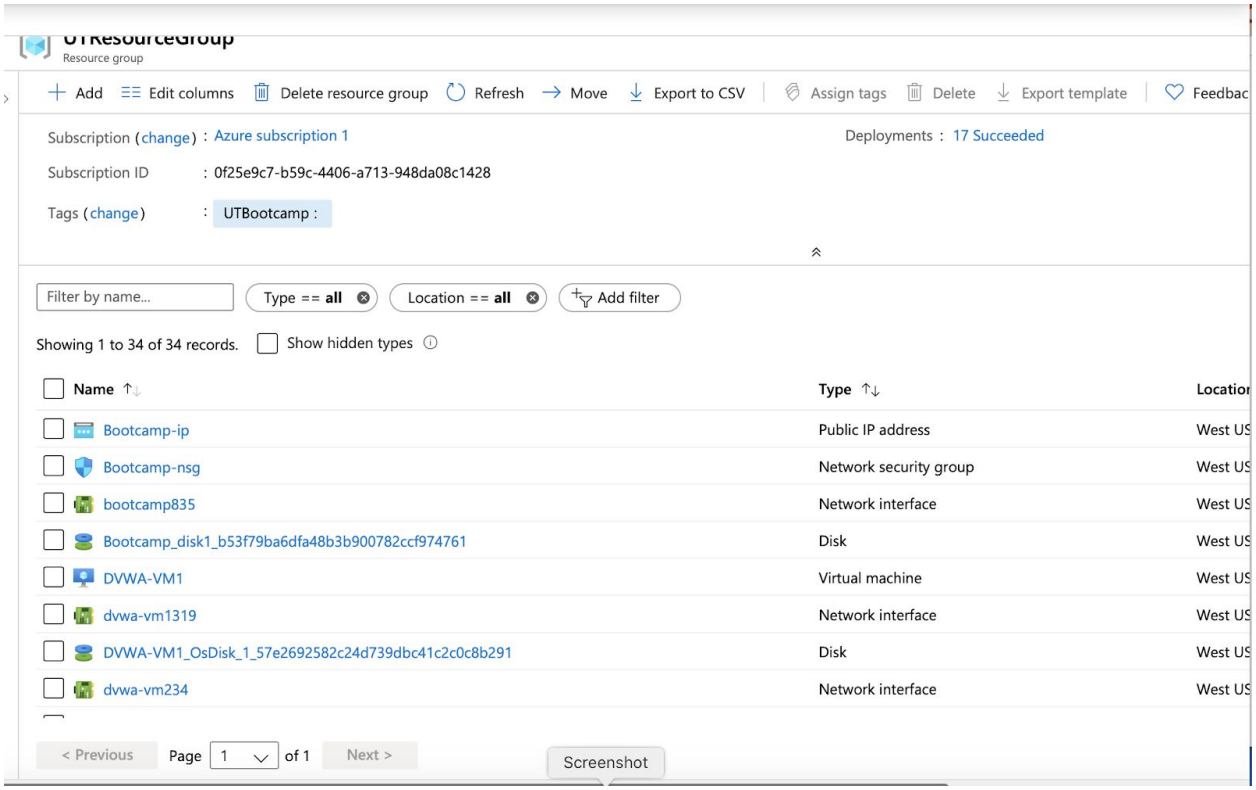
This is Project 1 of my Cybersecurity training

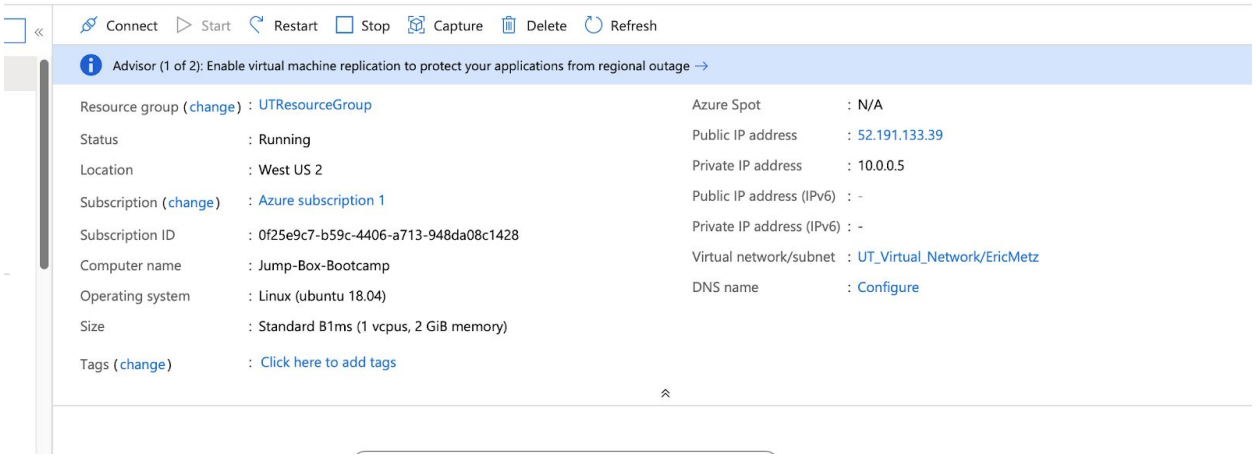
We started by creating an account in Azure and created several Virtual Machines. We then install Docker and a few containers running Ubuntu to act as DVWA web servers. Then to monitor our virtual network we created an ELK stack server so we can query the data and create metrics.

First step after getting into Azure is to create a Resource Group to put our network into.

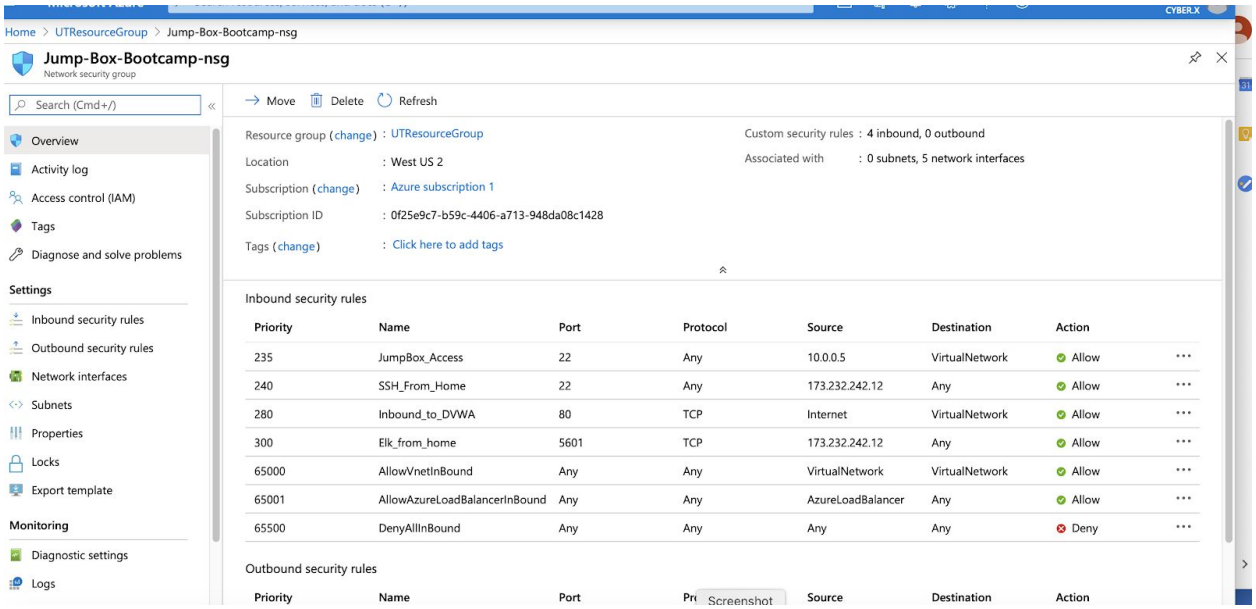


Now we can build our virtual network and add VMs, security rules, firewalls, and a load balancer.

The first VM is our jump-box. This VM has a public facing IP, where we will then jump to other VMs and containers in the network.

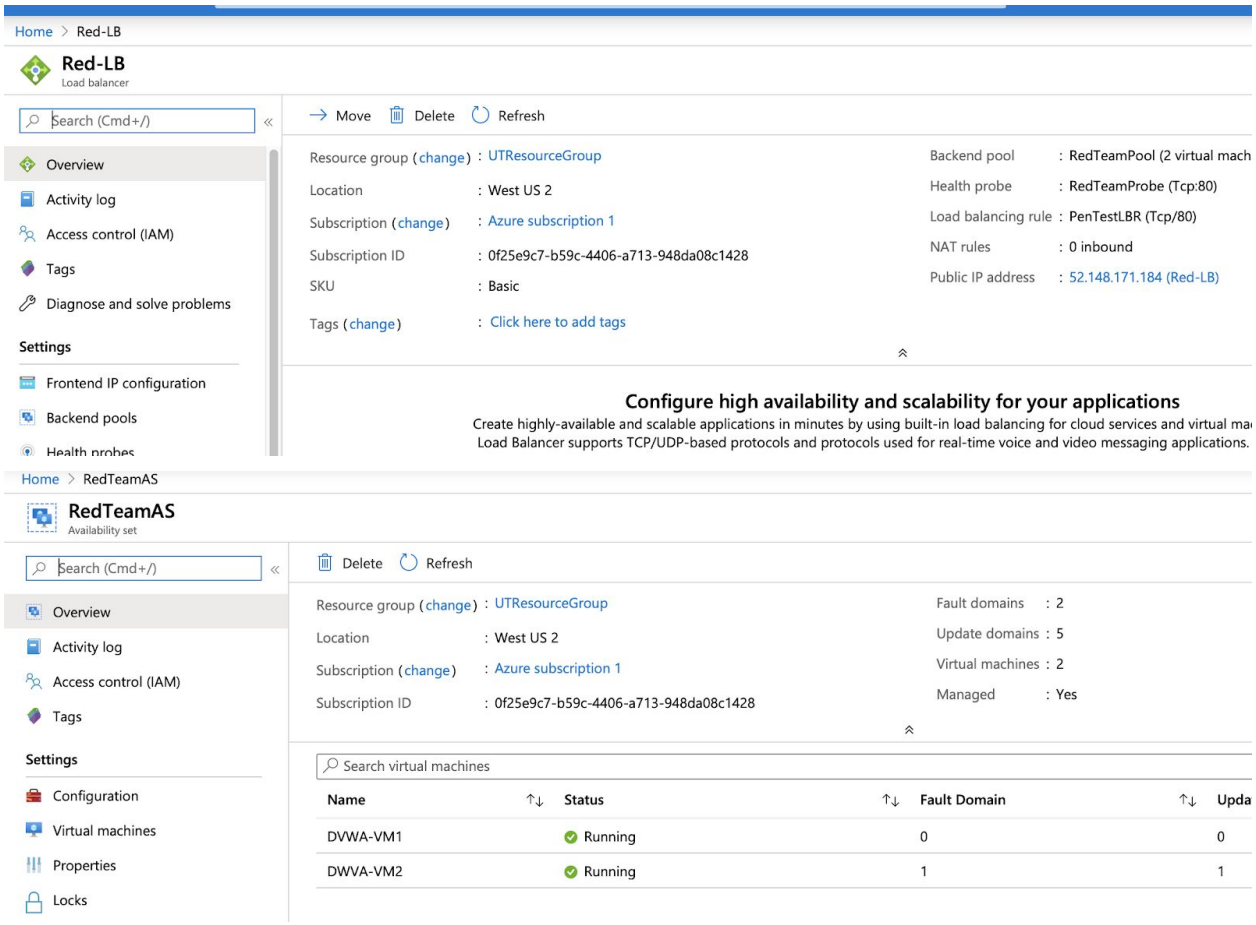


We need to configure our security group to allow SSH into the jump-box from only our home IP. This is the first layer of security in the network .

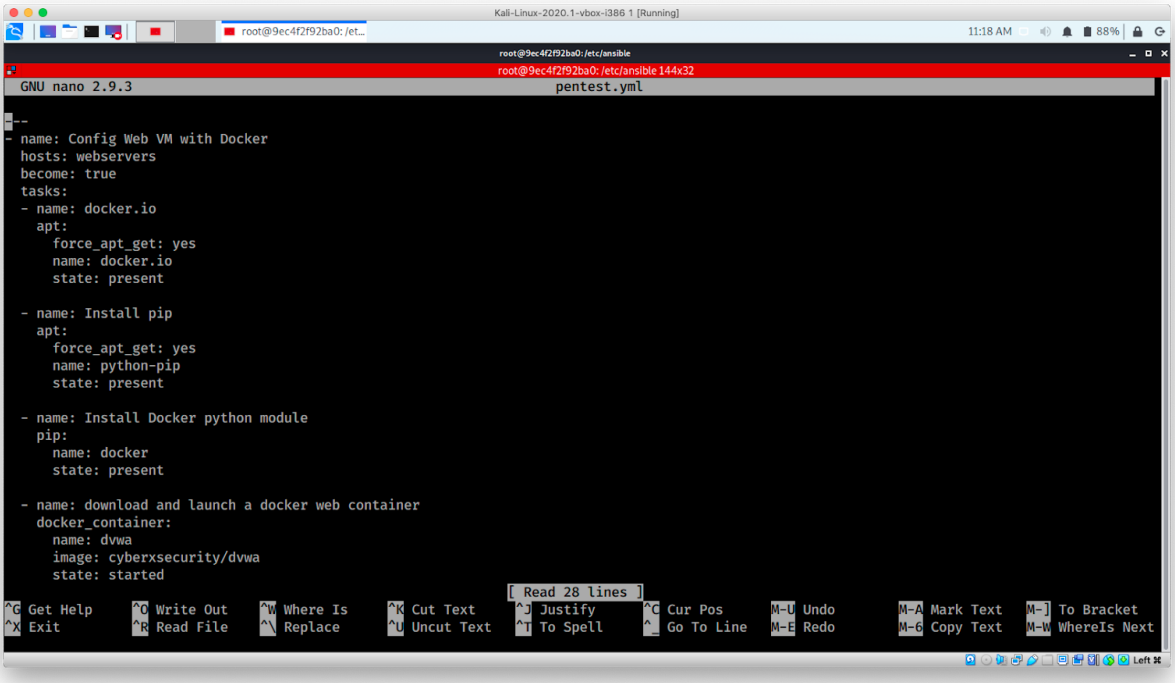


We then created two more VMs calling them DVWA 1 & 2.
To be able to log into both VMs independently and share data between them we had to generate and share a public RSA key between all the VMs and restrict sharing data to only within the virtual network by using the private IP addresses of the VMs.

We balance the load on our network by placing our VMs within a load balancer and assigning the VMs into availability sets so they can be balanced accordingly.

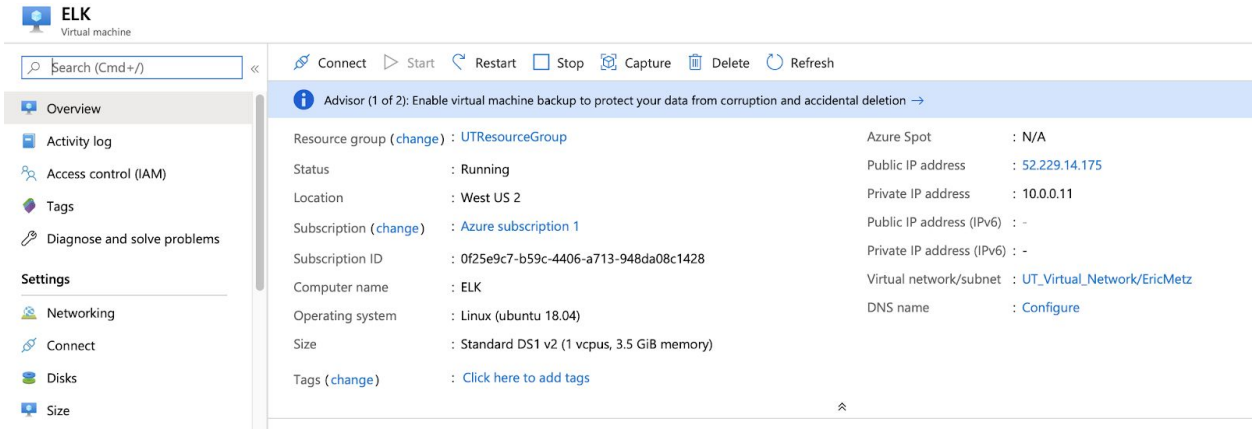


Now we need to install Docker and get some containers going on these VMs. For the sake of this project we are only putting Ubuntu DVWA web servers on these machines. To automate the process we are creating YAML playbooks to install the web server on all containers at the same time.

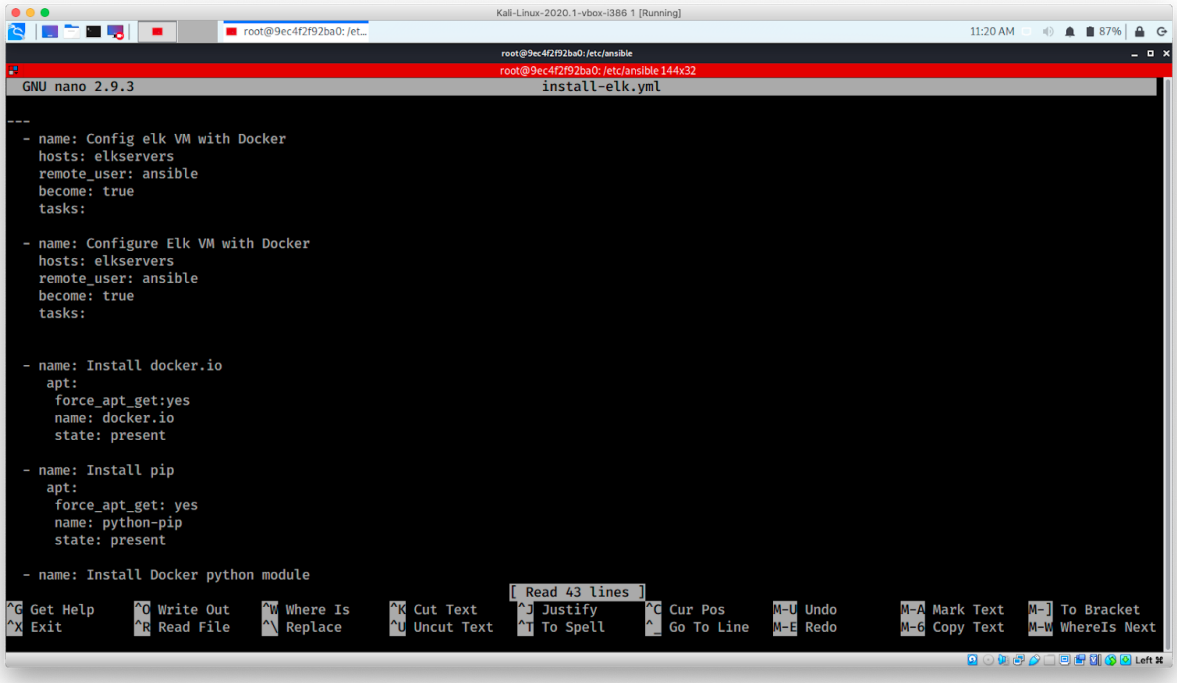


After we have the containers running and have our YAML code executed we need to get an ELK stack server up and running so we can monitor the traffic and create logs and metrics.

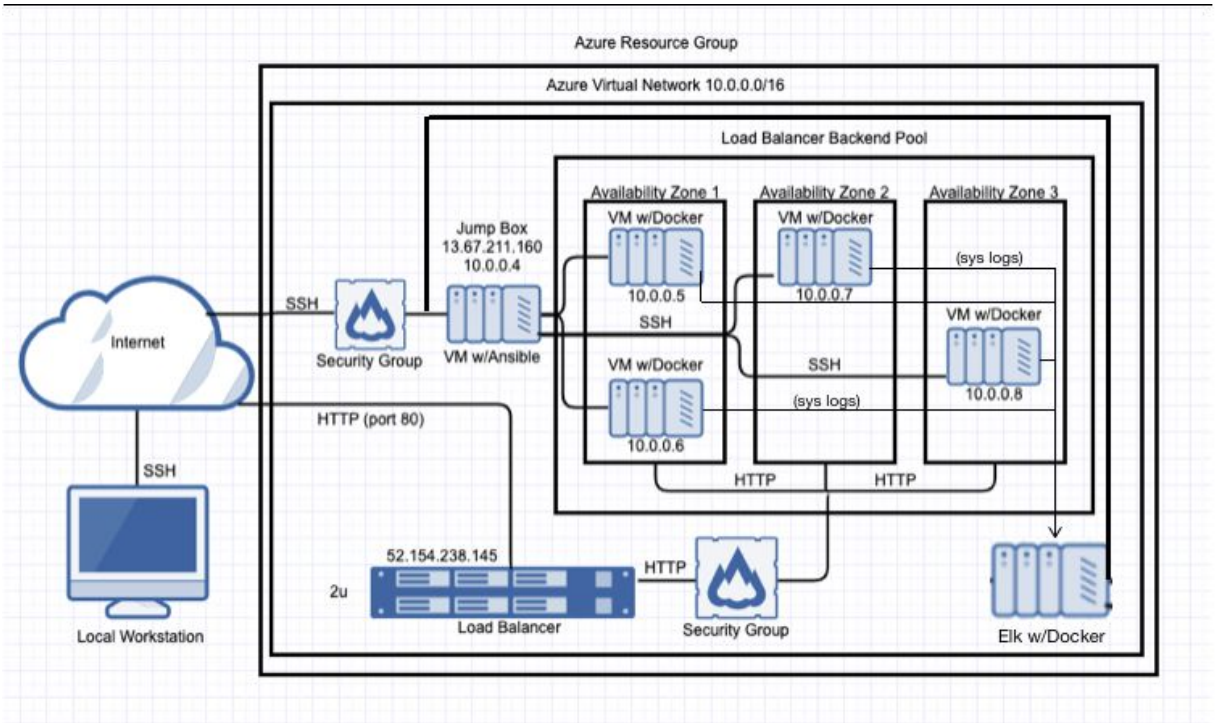
The ELK server is much like the Jump-Box in that we need to be able to look at it publicly in a browser. It has a public IP and gets traffic from multiple ports. It resides behind our secure firewall and can only be accessed from an IP we designate.



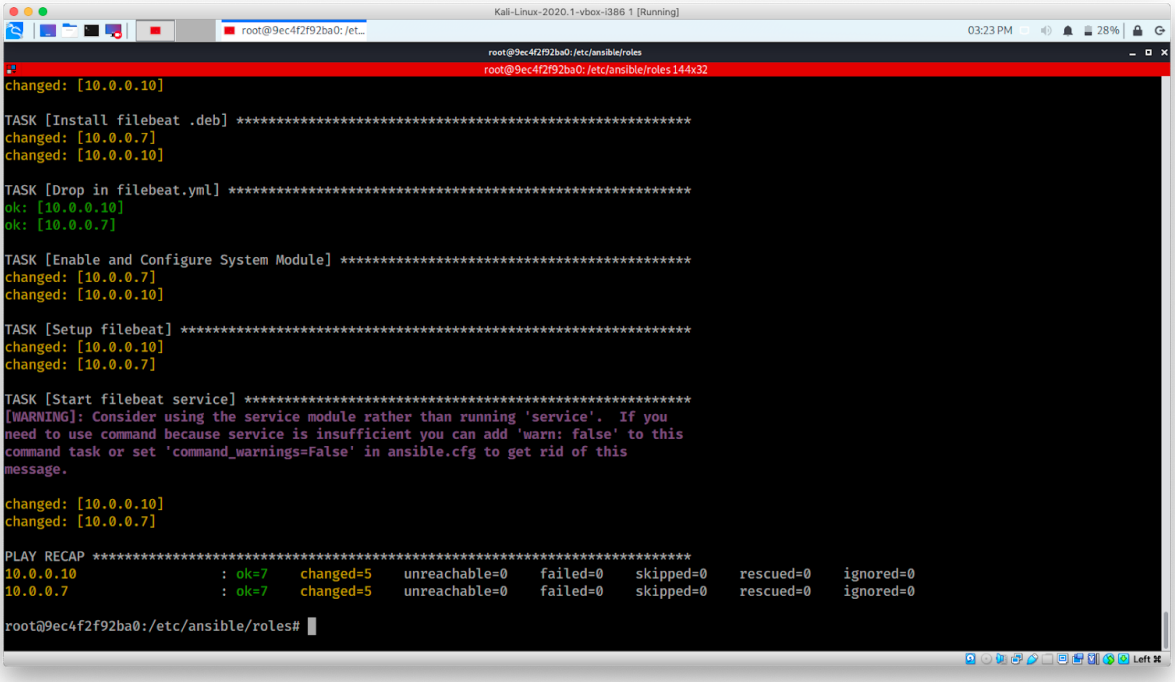
After this server is up and running we need to install the ELK stack on it. Again with YAML code



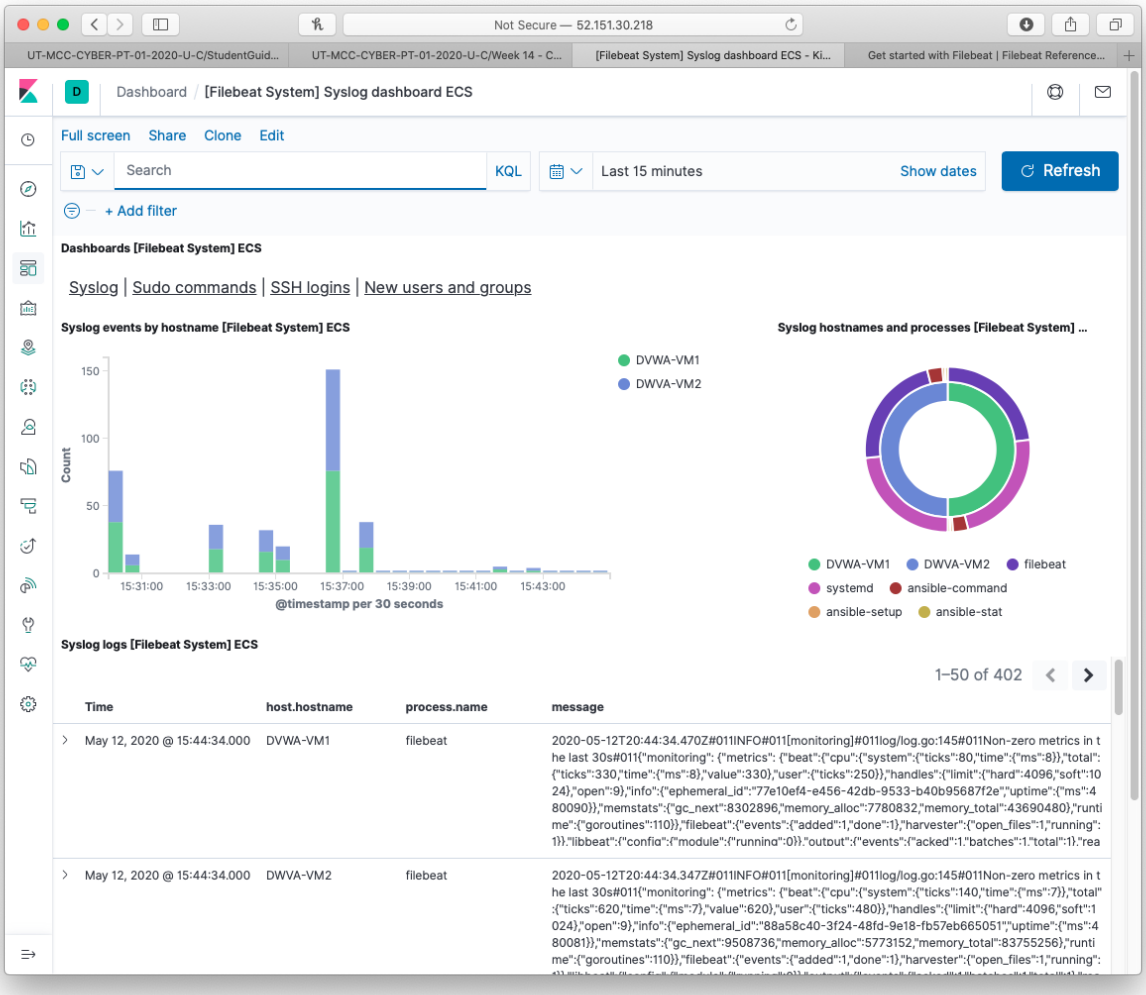
When everything is setup it should be mapped out like this.



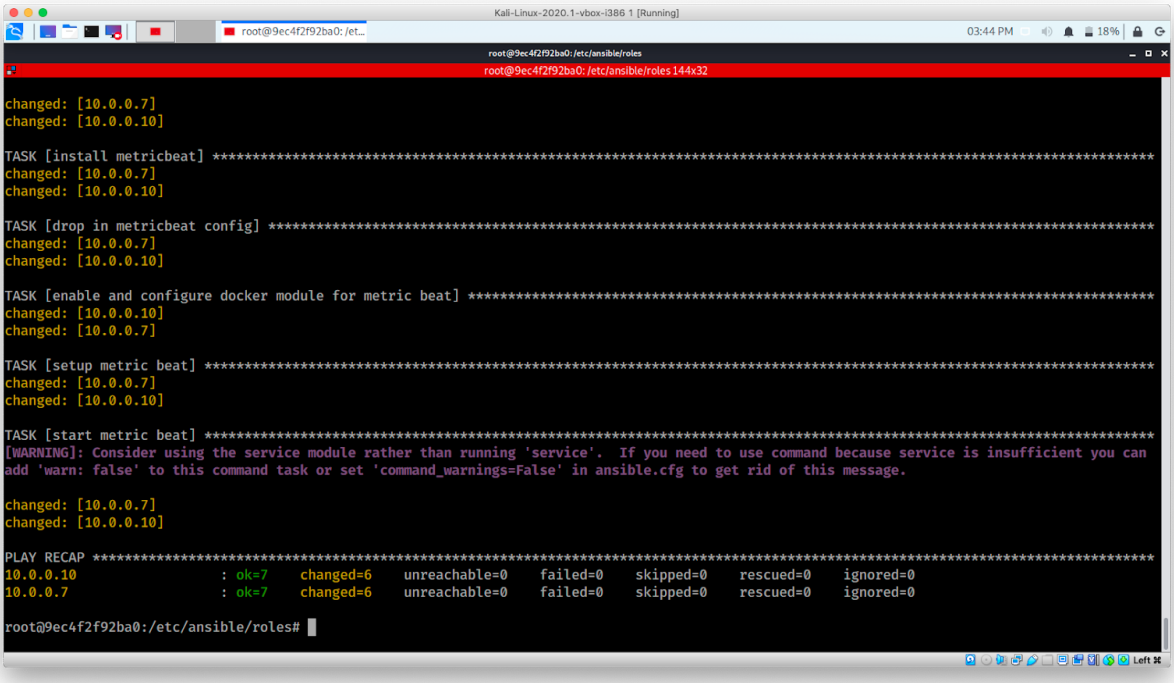
No let’s capture some log data with Filebeat.
This id open source programming so we can go to our ELK server web page and grab the conifg file and the YAML execution.

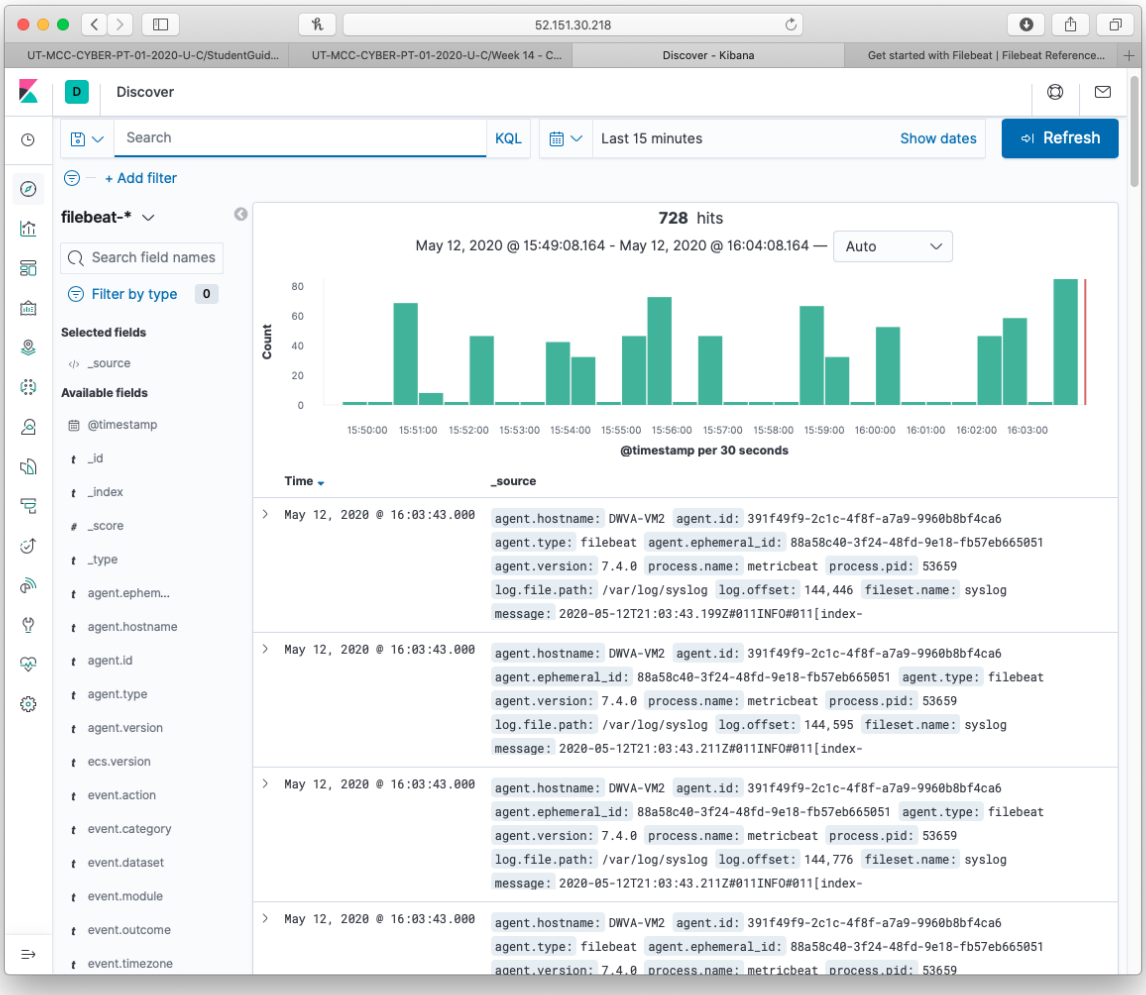


And then check if there is log data flowing



Now to get some metrics on these logs we need to do the same process with MetricBeat.


Kali-Linux-2020.1-vbox-i386 1 [Running]
root@9ec4f2f92ba0: /et...
03:44 PM
18%
root@9ec4f2f92ba0: /etc/ansible/roles
root@9ec4f2f92ba0: /etc/ansible/roles 144x32
changed: [10.0.0.7]
changed: [10.0.0.10]
TASK [install metricbeat] ********
changed: [10.0.0.7]
changed: [10.0.0.10]
TASK [drop in metricbeat config] ********
changed: [10.0.0.7]
changed: [10.0.0.10]
TASK [enable and configure docker module for metric beat] ********
changed: [10.0.0.10]
changed: [10.0.0.7]
TASK [setup metric beat] ********
changed: [10.0.0.7]
changed: [10.0.0.10]
TASK [start metric beat] ********
[WARNING]: Consider using the service module rather than running 'service'. If you need to use command because service is insufficient you can add 'warn: false' to this command task or set 'command_warnings=False' in ansible.cfg to get rid of this message.
changed: [10.0.0.7]
changed: [10.0.0.10]
PLAY RECAP ********
10.0.0.10 : ok=7 changed=6 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
10.0.0.7 : ok=7 changed=6 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
root@9ec4f2f92ba0:/etc/ansible/roles#
Left ⌘



We now have a functioning cloud based network that is robustly secure and software installed that we can configure to monitor the website traffic

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