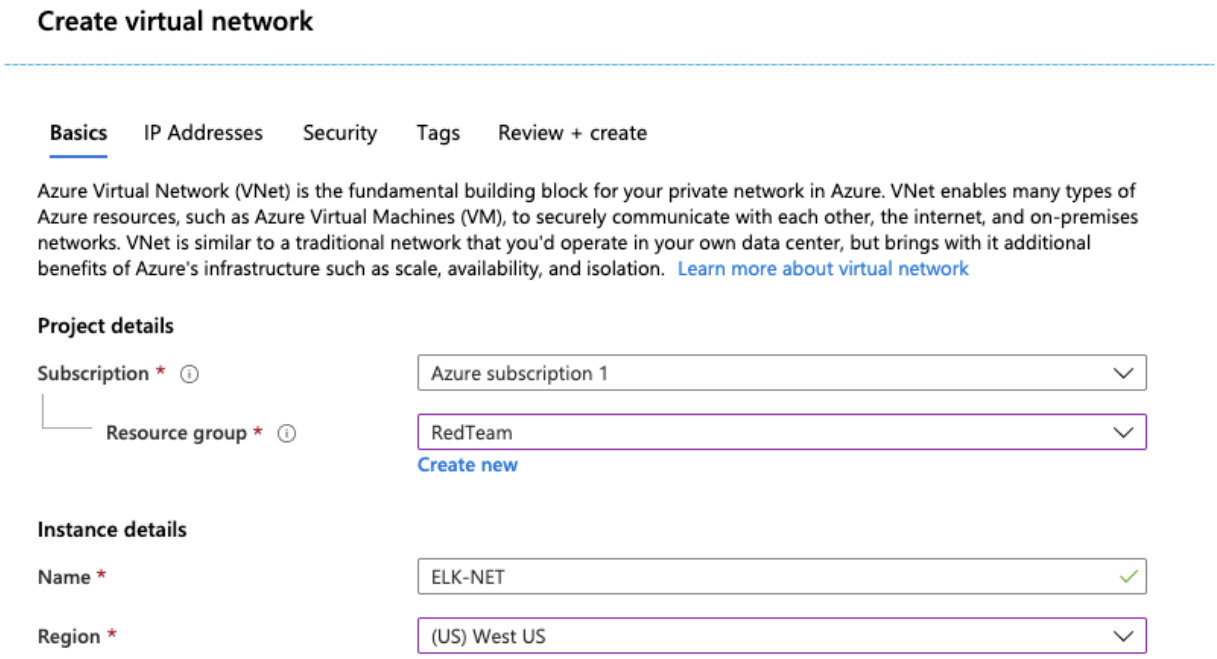
Day 1 Solution Guide: ELK Installation

1. Creating a New vNet

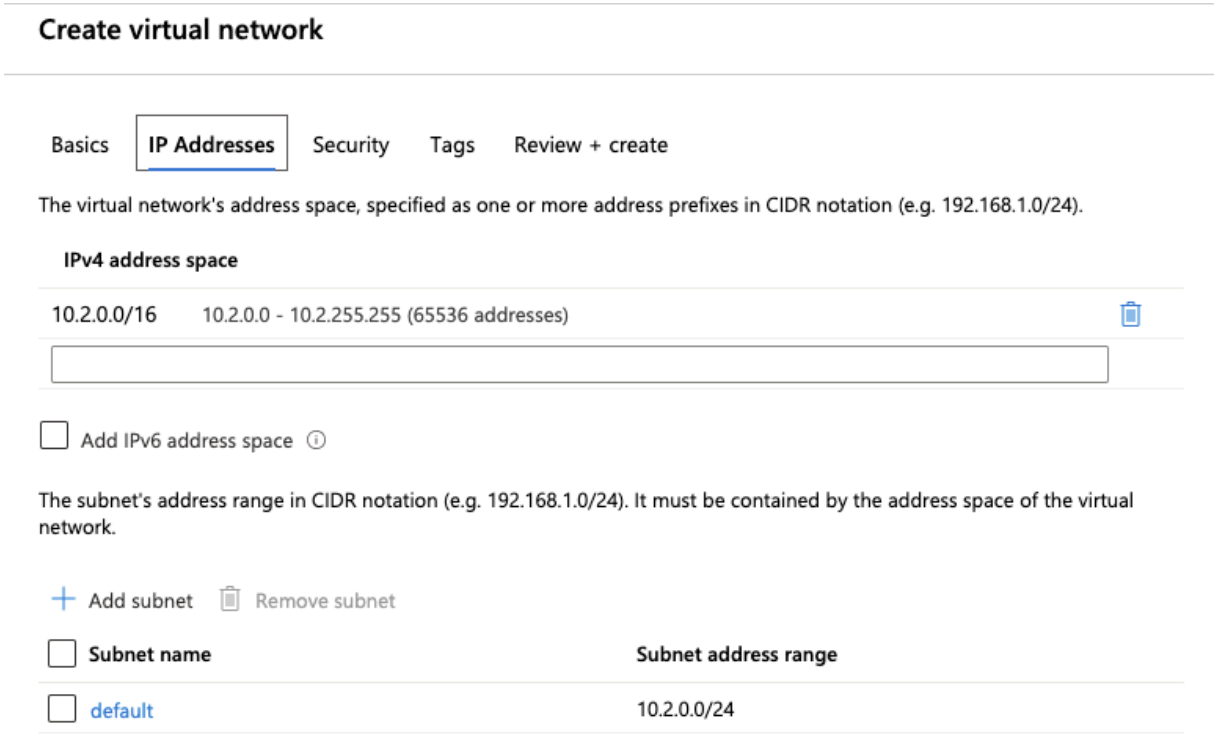
Make sure that you are logged into your personal Azure account, where your cloud security unit VMs are located.

- Create a new vNet located in the same resource group you have been using.
    - Make sure this vNet is located in a *new* region and not the same region as your other VM's.

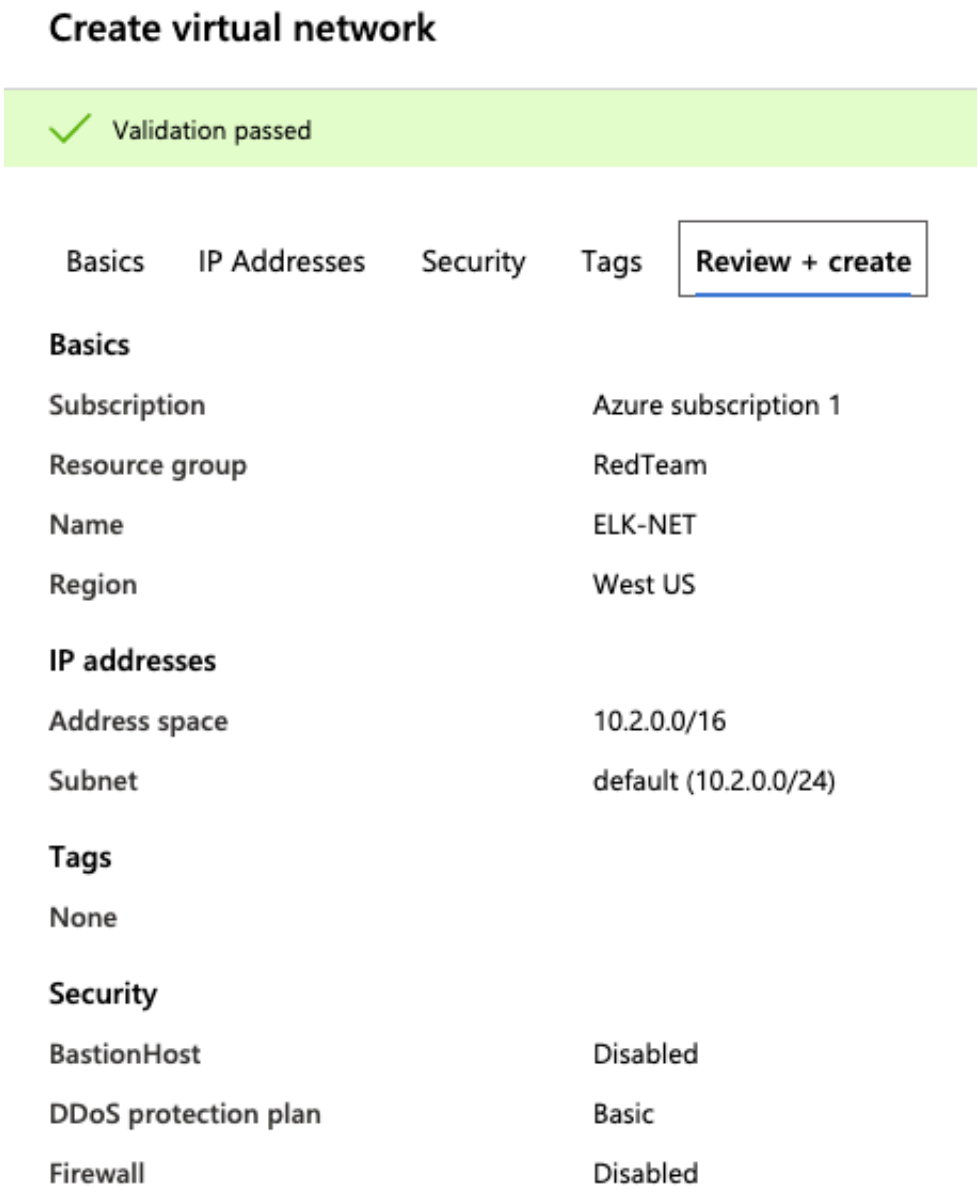


Here we are adding it to the `(US) West US` region because all the other resources are in the `(US) East US` region.

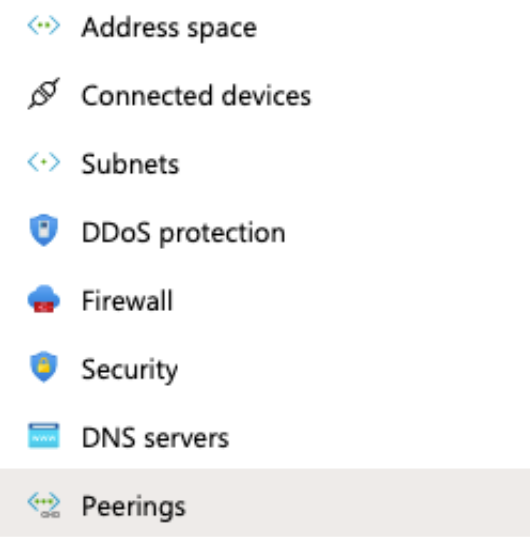
- Note that *which* region you select is not important as long as it's a different US region than your other resources.



- Leave the rest of the settings at default.
    - Notice, in this example, that the IP Addressing has automatically created a new network space of `10.2.0.0/16`. If your network is different (10.1.0.0 or 10.3.0.0) it is ok as long as you accept the default settings. Azure automatically creates a network that will work.



- Create a Peer connection between your vNets. This will allow traffic to pass between your vNets and regions. This peer connection will make both a connection from your first vNet to your Second vNet *And* a reverse connection from your second vNet back to your first vNet. This will allow traffic to pass in both directions.
- Navigate to 'Virtual Network' in the Azure Portal.
- Select your new vNet to view it's details.
- Under 'Settings' on the left side, select 'Peerings'.
- Click the `+ Add` button to create a new Peering.



- Make sure your new Peering has the following settings:
  - A unique name of the connection from your new vNet to your old vNet.
    - Elk-to-Red would make sense
  - Choose your original RedTeam vNet in the dropdown labeled 'Virtual Network'. This is the network you are connecting to your new vNet and you should only have one option.
  - Name the resulting connection from your RedTeam Vnet to your Elk vNet.
    - Red-to-Elk would make sense
- Leave all other settings at their defaults.

For peering to work, two peering links must be created. By selecting remote virtual network, Azure will create both peering links.

This virtual network

Peering link name *

ELK-to-Red

Traffic to remote virtual network

- (●) Allow (default)
- ( ) Block all traffic to the remote virtual network

Traffic forwarded from remote virtual network

- (●) Allow (default)
- ( ) Block traffic that originates from outside this virtual network

Virtual network gateway or Route Server

- ( ) Use this virtual network's gateway or Route Server
- ( ) Use the remote virtual network's gateway or Route Server
- (●) None (default)

Remote virtual network

Peering link name *

Red-to-ELK

Virtual network deployment model

- (●) Resource manager
- ( ) Classic

[ ] I know my resource ID

Subscription *

Azure subscription 1

Virtual network *

elk-net

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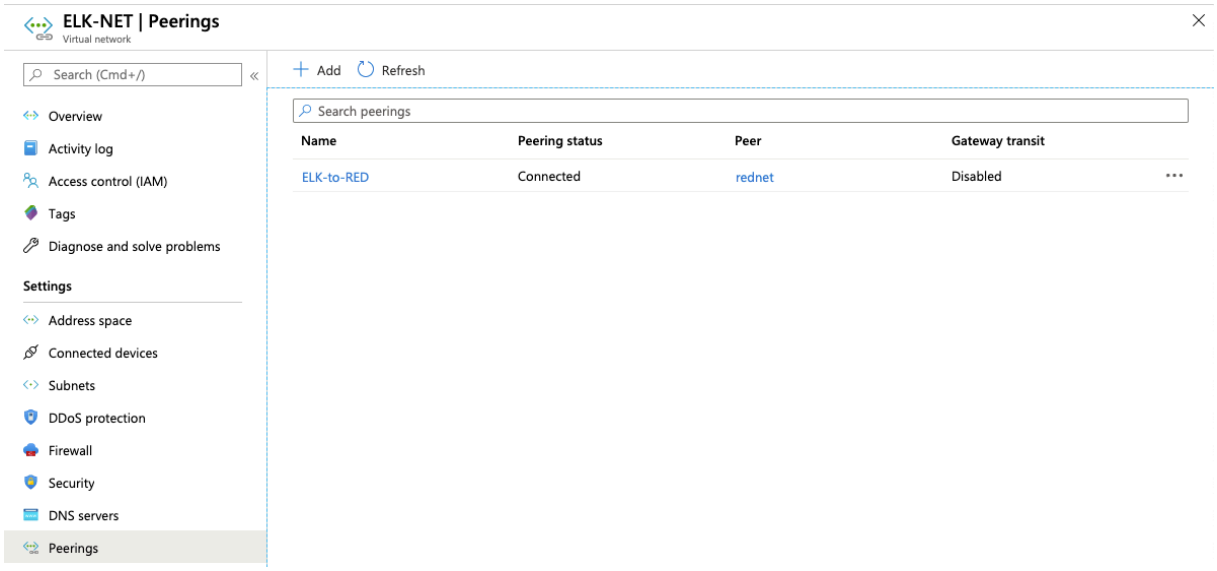


2. Creating a New VM

Set up a new virtual machine to run ELK.

- SSH into your Jump-Box using `ssh username@jump.box.ip`
- Check for your Ansible container:

```
sysadmin@Jump-Box-Provisioner:~$ sudo docker ps
CONTAINER ID        IMAGE                  COMMAND                  CREATED
           STATUS              PORTS                NAMES
```

- Locate the container name:

```
sysadmin@Jump-Box-Provisioner:~$ sudo docker container list -a
CONTAINER ID        IMAGE                           COMMAND
  CREATED             STATUS                       PORTS                N
4d16db8c80d6        cyberxsecurity/ubuntu:bionic    "bash"
  3 days ago          Exited (0) 3 days ago
```

- Start the container:

```
sysadmin@Jump-Box-Provisioner:~$ sudo docker container start romantic
_noyce
romantic_noyce
sysadmin@Jump-Box-Provisioner:~$
```

- Connect to the Ansible container:

```
sysadmin@Jump-Box-Provisioner:~$ sudo docker container attach romanti
c_noyce
root@6160a9be360e:~#
```

- Copy the SSH key from the Ansible container on your jump box:

```
# cat ~/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQDUfoIGFxTFyZXWV0QuCCmPKxsvGhnW/
sKwGrOZ/K7nozKxsaRSCSG/oLGbugTyi9+fRY9wYWCmK/HLpjOaTEi8iU+ydvGM8nTloD
/dIlje9PClUCxFQjql2XyQz32FqDjHV8rCZA+Pz+9ozc7BogQwLLg/0c4beQYbVQPKs1Q
GHf31YuXs6hAraJMXCx7VsDJHQwfv1kScE2s+yGeUJMt0ny3xaED8y2Pn+mBF2Tw7HLT+
HPkmvXcuCkLxo6gY3ad+EH9Ko0r2AEFvtZTcFyGfIDLcS6jo+GUlKuCLGRAzeKNhq+D78
fHf8Vt4qvUSIywP9HHnvnqfUCVKXsKxZGGl root@6160a9be360e
```

- Configure a new VM using that SSH key.
  - Make sure this VM has at least 4 GB of RAM.
  - Make sure it has a public IP address.
  - Make sure it is added to your new vNet and create a new Security Group for it.

- Solutions:

Home > Virtual machines > Create a virtual machine

Create a virtual machine

Subscription * — Azure subscription 1

Resource group * — RedTeam

Create new

Instance details

Virtual machine name * — ELK-SERVER

Region * — (US) West US

Availability options — No infrastructure redundancy required

Image * — Ubuntu Server 18.04 LTS

Browse all public and private images

Size * — **Standard D2s v3**
2 vcpus, 8 GiB memory ($85.41/month)
Change size

Administrator account

Authentication type — SSH public key / Password

Username * — sysadmin

SSH public key *

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQDUfoIGFxTFyZXWV0QuCCmPKxsv
GhnW/sKwGrOZ/K7nozKxsaRSCSG/oLGbugTyi9+fRY9wYWCmK/HLpjOaTEi8i
```

Learn more about creating and using SSH keys in Azure

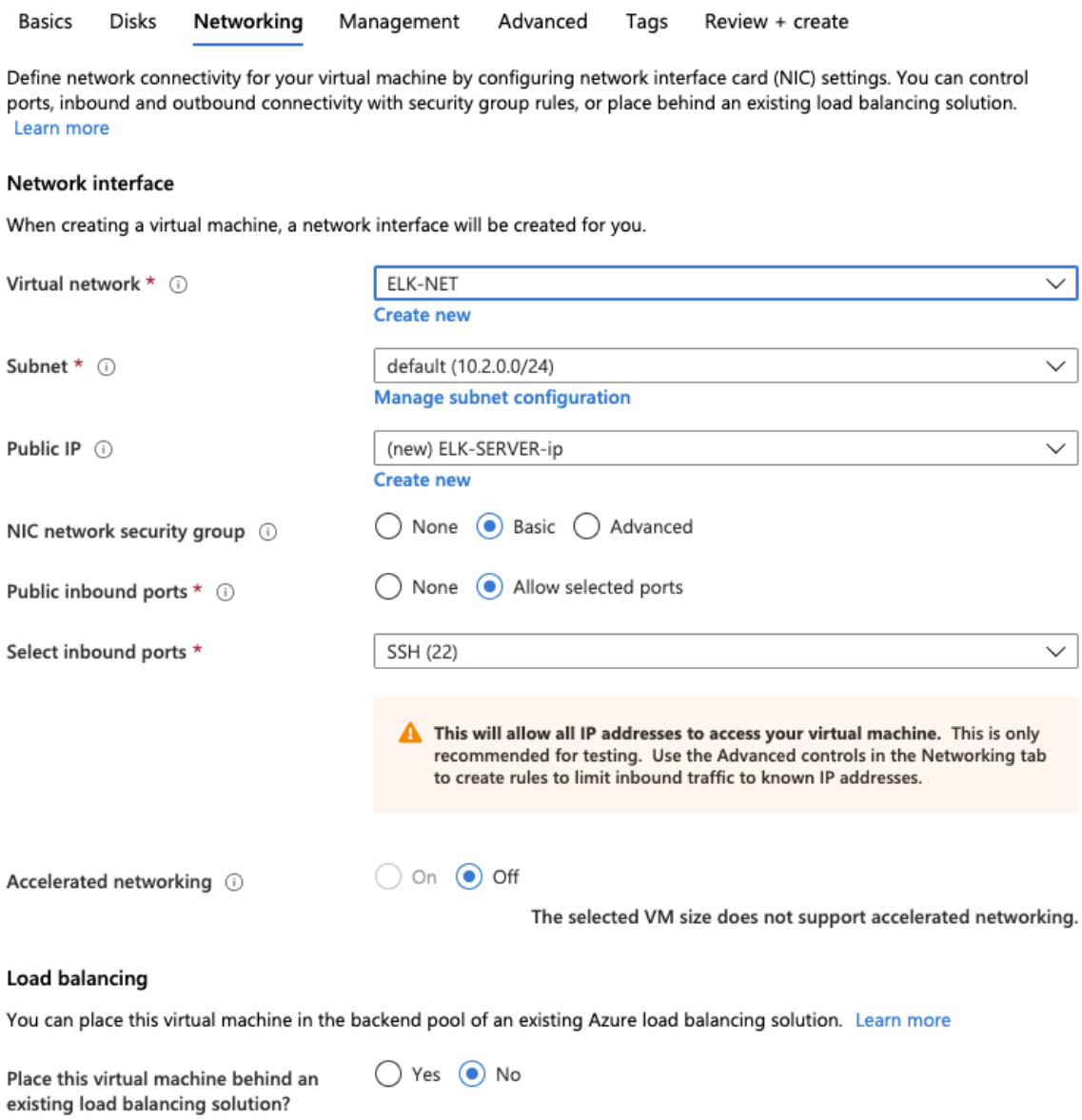
Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * — None / Allow selected ports

Select inbound ports * — SSH (22)

This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.



3. Downloading and Configuring the Container

In this step, you had to: - Add your new VM to the Ansible `hosts` file. - Create a new Ansible playbook to use for your new ELK virtual machine. - The header of the Ansible playbook can specify a different group of machines as well as a different remote user (in case you did not use the same admin name):

```
  ```bash
  - name: Config elk VM with Docker
    hosts: elk
    remote_user: azadmin
    become: true
    tasks:
  ```

- Before you can run the elk container, we need to increase the memory:

```yaml
- name: Use more memory
  sysctl:
    name: vm.max_map_count
    value: '262144'
    state: present
    reload: yes
```
- This is a system requirement for the ELK container. More info [at the `
elk-docker` documentation](https://elk-docker.readthedocs.io/#prerequisit
es).
- The playbook should then install the following services:
  - `docker.io`
  - `python3-pip`
  - `docker`, which is the Docker Python pip module.
```

4. Launching and Exposing the Container

After Docker is installed, download and run the `sebp/elk:761` container. - The container should be started with these published ports: - `5601:5601` - `9200:9200` - `5044:5044`

Your Ansible output should resemble the output below and not contain any errors:

```
root@6160a9be360e:/etc/ansible# ansible-playbook elk.yml

PLAY [Configure Elk VM with Docker] ************************************
***************

TASK [Gathering Facts] *************************************************
***************
ok: [10.1.0.4]

TASK [Install docker.io] ***********************************************
***************
changed: [10.1.0.4]

TASK [Install python3-pip] *********************************************
***************
changed: [10.1.0.4]

TASK [Install Docker module] *******************************************
***************
changed: [10.1.0.4]

TASK [Increase virtual memory] *****************************************
***************
changed: [10.1.0.4]

TASK [Increase virtual memory on restart] ******************************
***************
changed: [10.1.0.4]

TASK [download and launch a docker elk container] **********************
***************
changed: [10.1.0.4]

TASK [Enable service docker on boot] ***********************************
**
changed: [10.1.0.4]

PLAY RECAP *************************************************************
***************
10.1.0.4                   : ok=1    changed=7    unreachable=0    failed
=0    skipped=0    rescued=0    ignored=0
```

- SSH from your Ansible container to your ELK machine to verify the connection before you run your playbook.

- After the ELK container is installed, SSH to your container and double check that your `elk-docker` container is running.

Run `sudo docker ps`

```
sysadmin@elk:~$ sudo docker ps
CONTAINER ID        IMAGE               COMMAND                  CREATED
            STATUS              PORTS
842caa422ed8        sebp/elk            "/usr/local/bin/star…"   3 hours
ago         Up 3 hours          0.0.0.0:5044->5044/tcp, 0.0.0.0:5601->560
1/tcp, 0.0.0.0:9200->9200/tcp, 9300/tcp   elk
sysadmin@elk:~$
```

Solutions: - [Ansible Configuration File]() - [Ansible Hosts File]() - [ELK Playbook]()

5. Identity and Access Management

This ELK web server runs on port `5601`. Create an incoming rule for your security group that allows TCP traffic over port `5601` from your IP address.

Verify that you can load the ELK stack server from your browser at `http://[your.VM.IP]:5601/app/kibana`.

Solutions: Sending traffic to the entire ELK-NET is fine here because there are no other resources besides the ELK server.

Save Discard Delete

Source

IP Addresses

Source IP addresses/CIDR ranges *

207.5.43.36

Source port ranges *

*

Destination

Any

Service

Custom

Destination port ranges *

5601

Protocol

- (•) Any
- ( ) TCP
- ( ) UDP
- ( ) ICMP

Action

- (•) Allow
- ( ) Deny

Priority *

100

Name

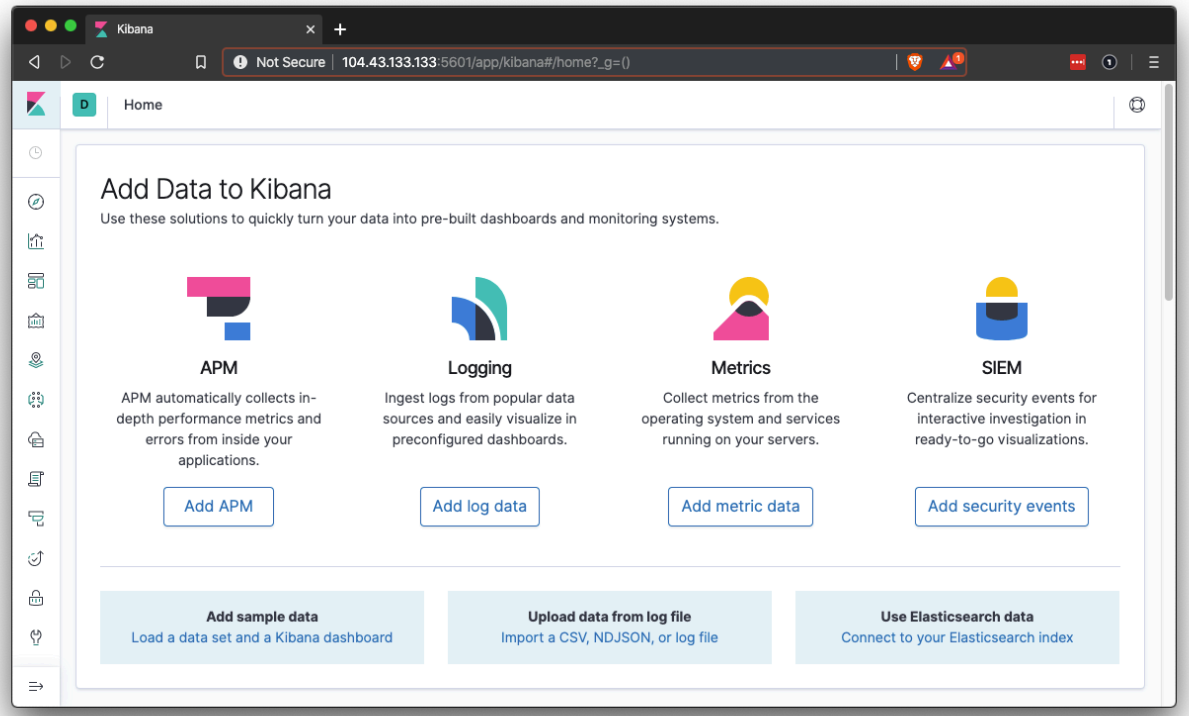
ALL

Description

Access to port 5601

You can also choose to send traffic *only* to the ELK server by changing "Virtual Network" to the IP of your ELK Server.

If everything is working correctly, you should see this webpage:



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