EASY GUIDE — Game of Active Directory (GOAD) — Windows Installation Setup

medium.com/@shanksf/game-of-active-directory-goad-windows-installation-setup-5d987f0228bd

Shanks 27 апреля 2024 г.

Shanks

Main project by Mayfly: https://github.com/Orange-Cyberdefense/GOAD

This was fully tested only on a Windows 10 machine with 64GB of RAM.

This may also work for `GOAD-light` and `NHA`.

It's supposed to be the easiest guide on the internet for using and appreciating GOAD.

Hope it works for you.

PREREQUISITES

- Windows 10 (HOST)
- VMWARE Workstation (Also may work with Virtualbox, just adapt)
- Vagrant (Windows)
- Kali or Ubuntu (Choose any distro you want)
- A lot of disk space (~120GB)
- A lot of ram (At least 32GB for the main GOAD)

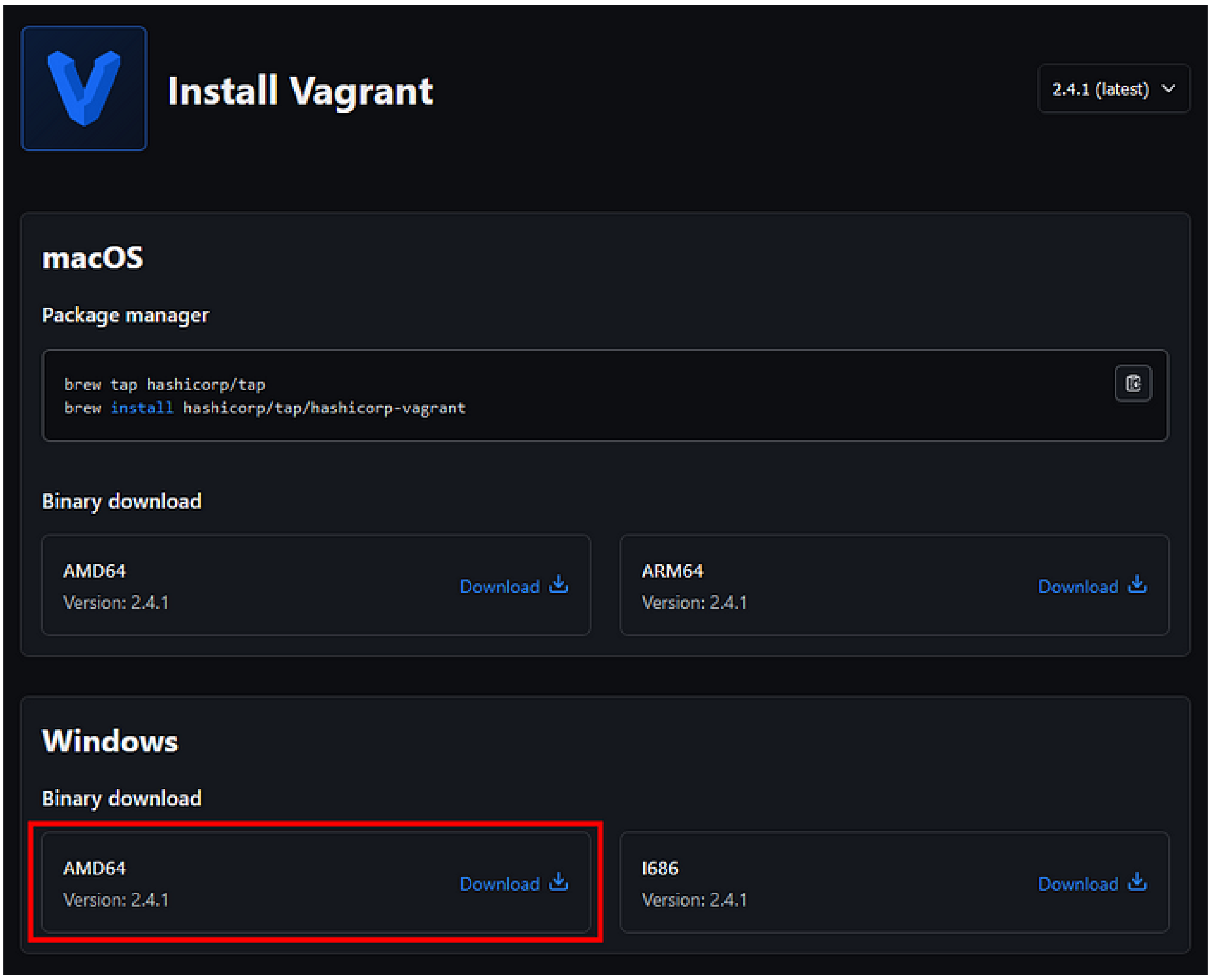
STEPS

Install VMware Workstation

https://www.vmware.com/products/workstation-pro/workstation-pro-evaluation.html

Install Vagrant for Windows

https://developer.hashicorp.com/vagrant/install?product_intent=vagrant#Windows



Install Vagrant

2.4.1 (latest)

macOS

Package manager

```
brew tap hashicorp/tap
brew install hashicorp/tap/hashicorp-vagrant
```

Binary download

AMD64
Version: 2.4.1

ARM64
Version: 2.4.1

Windows

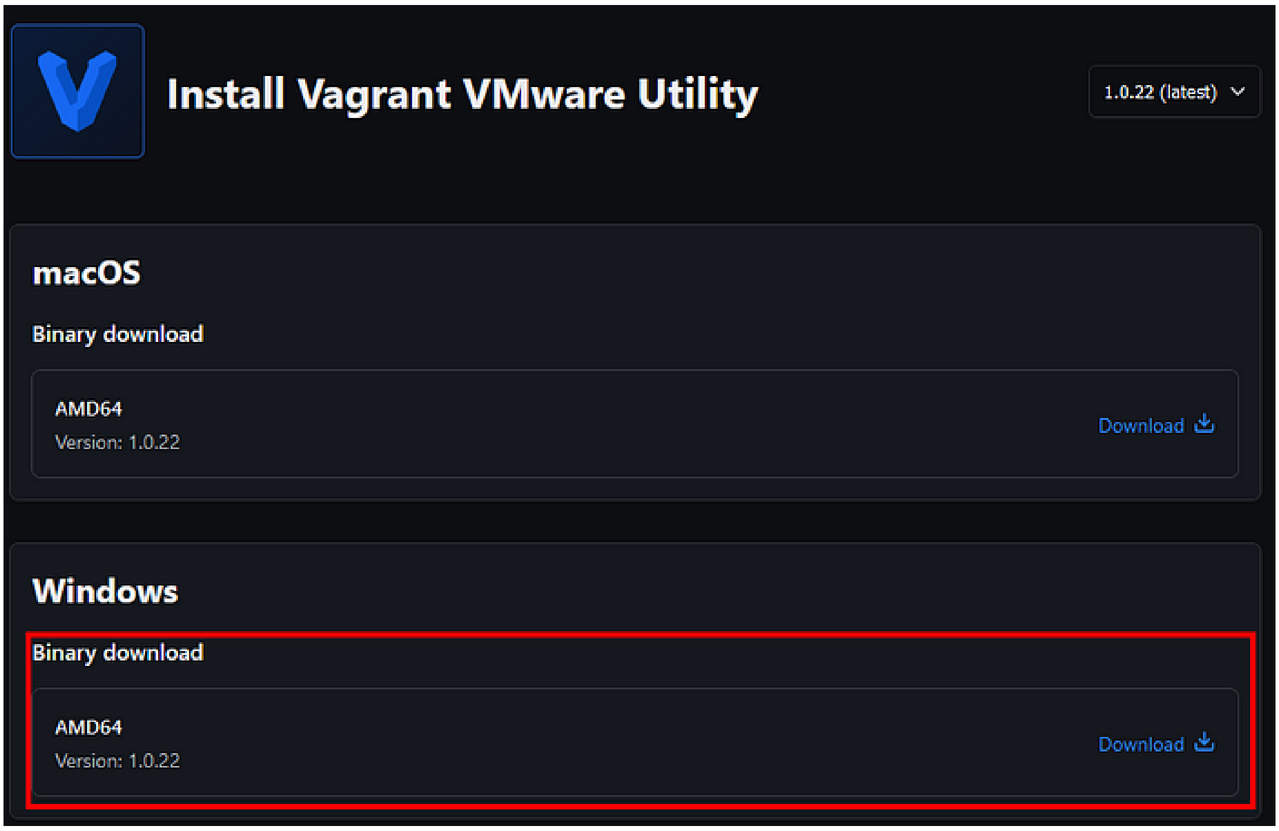
Binary download

AMD64
Version: 2.4.1

I686
Version: 2.4.1

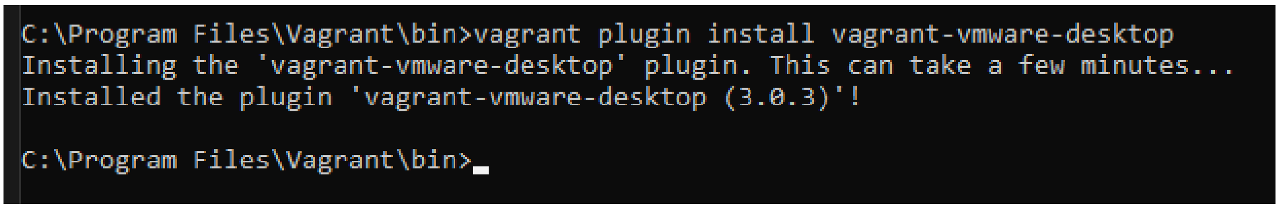
Install Vagrant VMware Utility

https://developer.hashicorp.com/vagrant/install/vmware



In the same folder your vagrant.exe is (default**C:\Program Files\Vagrant\bin\**), open a new cmd and type:

```
vagrant plugin install vagrant-vmware-desktop
```



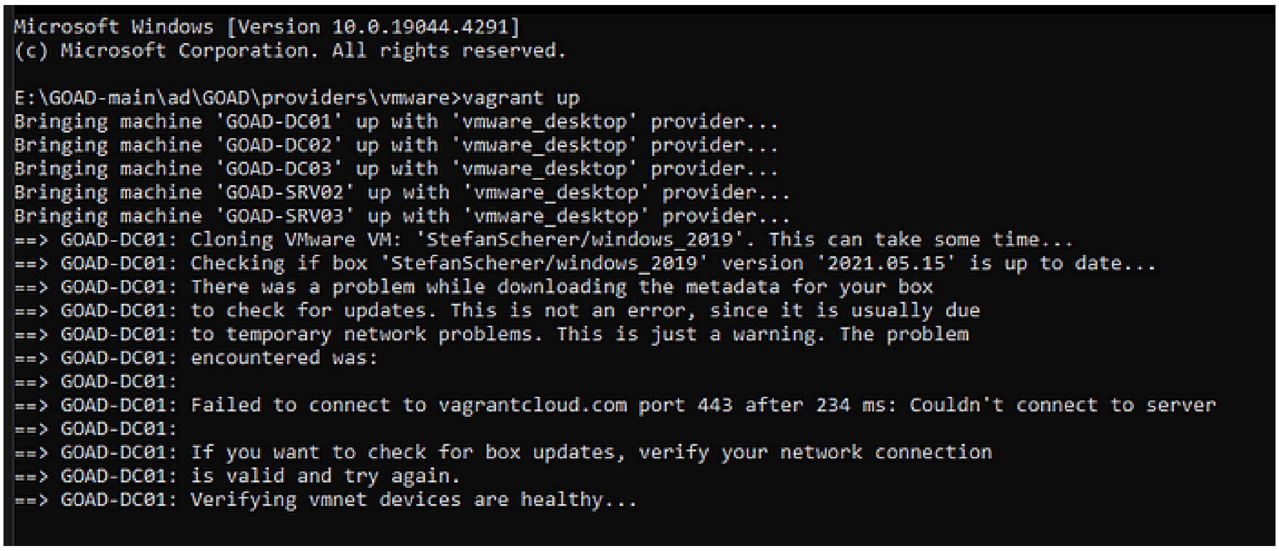
```
C:\Program Files\Vagrant\bin>vagrant plugin install vagrant-vmware-desktop
Installing the 'vagrant-vmware-desktop' plugin. This can take a few minutes...
Installed the plugin 'vagrant-vmware-desktop (3.0.3)'!

C:\Program Files\Vagrant\bin>
```

Clone GOAD to a folder of your liking (recommend being the biggest hard drive you have and not C:) or just Download the zip in their github

Go to providers folder (cd GOAD/ad/GOAD/providers/vmware**) and type**

```
vagrant up
```

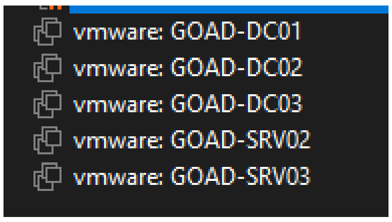


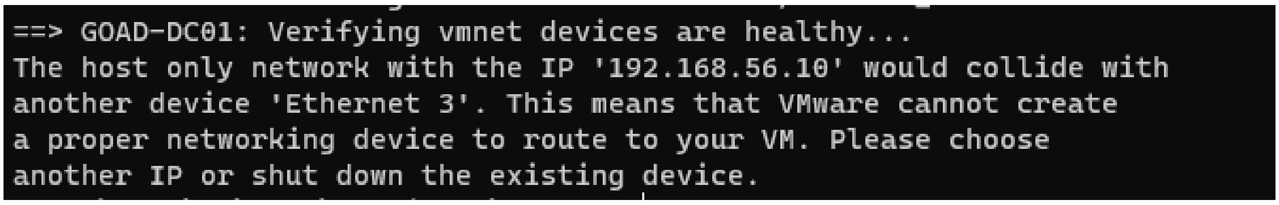
```
Microsoft Windows [Version 10.0.19044.4291]
(c) Microsoft Corporation. All rights reserved.

E:\GOAD-main\ad\GOAD\providers\vmware>vagrant up
Bringing machine 'GOAD-DC01' up with 'vmware_desktop' provider...
Bringing machine 'GOAD-DC02' up with 'vmware_desktop' provider...
Bringing machine 'GOAD-DC03' up with 'vmware_desktop' provider...
Bringing machine 'GOAD-SRV02' up with 'vmware_desktop' provider...
Bringing machine 'GOAD-SRV03' up with 'vmware_desktop' provider...
==> GOAD-DC01: Cloning VMware VM: 'StefanScherer/windows_2019'. This can take some time...
==> GOAD-DC01: Checking if box 'StefanScherer/windows_2019' version '2021.05.15' is up to date...
==> GOAD-DC01: There was a problem while downloading the metadata for your box
==> GOAD-DC01: to check for updates. This is not an error, since it is usually due
==> GOAD-DC01: to temporary network problems. This is just a warning. The problem
==> GOAD-DC01: encountered was:
==> GOAD-DC01:
==> GOAD-DC01: Failed to connect to vagrantcloud.com port 443 after 234 ms: Couldn't connect to server
==> GOAD-DC01:
==> GOAD-DC01: If you want to check for box updates, verify your network connection
==> GOAD-DC01: is valid and try again.
==> GOAD-DC01: Verifying vmnet devices are healthy...
```

This will download and setup all the 5 machines necessary to your vmware. All 5 machines should start and appear on your vmware library.

> If the error below appears, try disabling any virtualbox network adaptors you have. This will conflict with GOAD.



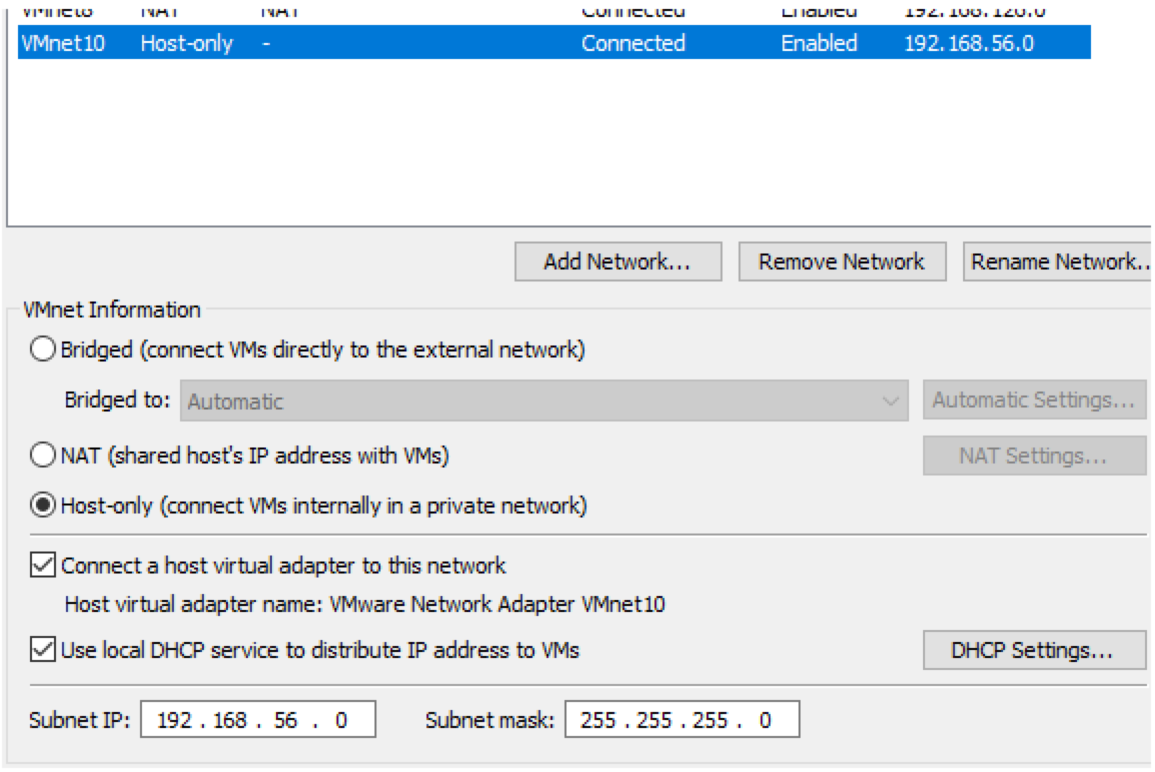


```
==> GOAD-DC01: Verifying vmnet devices are healthy...
The host only network with the IP '192.168.56.10' would collide with
another device 'Ethernet 3'. This means that VMware cannot create
a proper networking device to route to your VM. Please choose
another IP or shut down the existing device.
```

To able to communicate with the other machines, you gotta add a **new NIC** to your vmware and add it to your Kali (or distro of your choice).

Go to VMWare Workstation's Virtual Network Editor

Add a new NIC adapter to **192.168.56.0 (Host-only)** then add to you Kali/Ubuntu and **keep your NAT otherwise you won't have internet.**


VMnet10	Host-only	-	Connected	Enabled	192.168.56.0

VMnet Information

Bridged (connect VMs directly to the external network)

Bridged to: Automatic

NAT (shared host's IP address with VMs)

[✓ Host-only (connect VMs internally in a private network)]

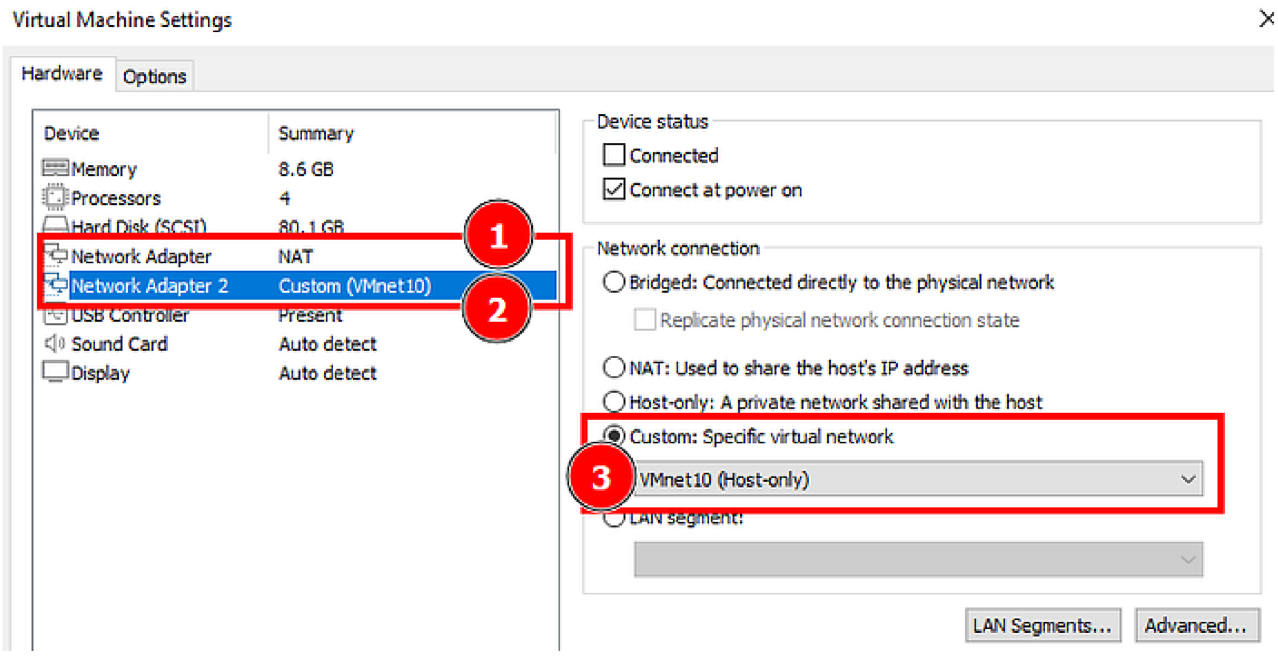
☑ Connect a host virtual adapter to this network

Host virtual adapter name: VMware Network Adapter VMnet10

☑ Use local DHCP service to distribute IP address to VMs

Subnet IP: 192 . 168 . 56 . 0 Subnet mask: 255 . 255 . 255 . 0

Add a host only vmnet to


Virtual Machine Settings

Device	Summary
Memory	8.6 GB
Processors	4
Hard Disk (SCSI)	80.1 GB
Network Adapter	NAT
Network Adapter 2	Custom (VMnet10)
USB Controller	Present
Sound Card	Auto detect
Display	Auto detect

Device status

☐ Connected

☑ Connect at power on

Network connection

Bridged: Connected directly to the physical network

Replicate physical network connection state

NAT: Used to share the host's IP address

Host-only: A private network shared with the host

[✓ Custom: Specific virtual network]

VMnet10 (Host-only)

LAN segment:

Add a new NIC on Kali for the same vmnet you set up earlier and keep your NAT

Now, inside the distro of your choice (I'm using Kali here), fire up your terminal and install some dependencies that are needed for Ansible etc.

```
pip install --upgrade pip
pip install ansible-core==2.12.6
pip install pywinrm

sudo apt install sshpass lftp rsync openssh-client
```

Clone the GOAD repo again in your Kali

Install ansible-galaxy:

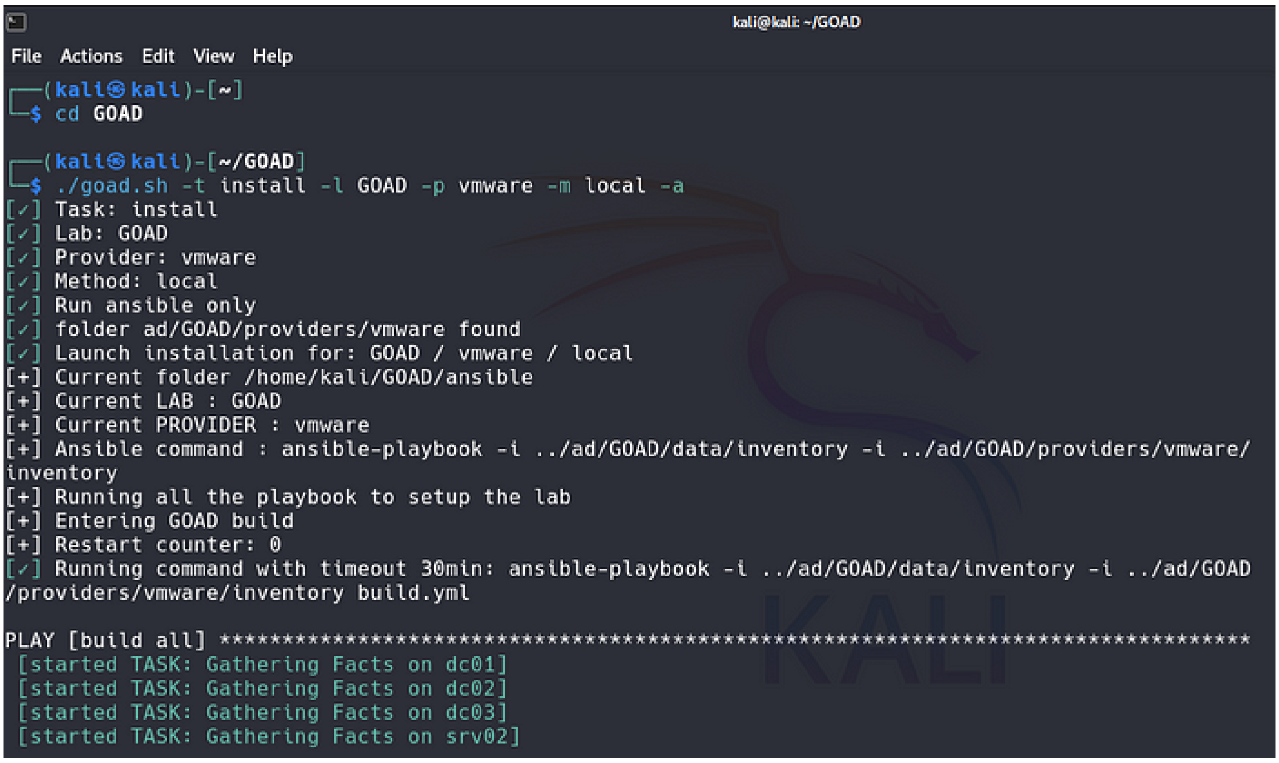
```
sudo apt install ansible-core
```

Then go to your ansible folder (cd GOAD/ansible) and install the requirements needed:

```
ansible-galaxy install -r requirements.yml
```

Go back to the root folder of GOAD and run the local installation

```
./goad.sh -t install -l GOAD -p vmware -m  -a
```



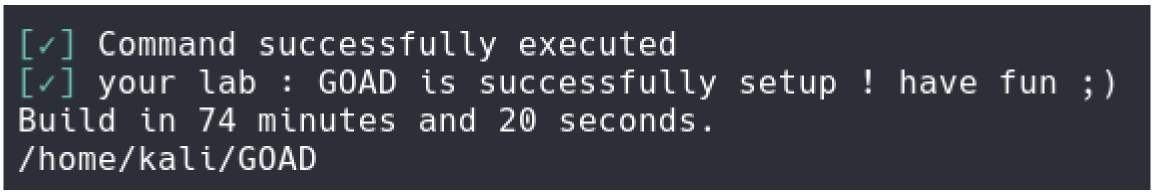
```
┌──(kali㉿kali)-[~]
└─$ cd GOAD

┌──(kali㉿kali)-[~/GOAD]
└─$ ./goad.sh -t install -l GOAD -p vmware -m local -a
[✓] Task: install
[✓] Lab: GOAD
[✓] Provider: vmware
[✓] Method: local
[✓] Run ansible only
[✓] folder ad/GOAD/providers/vmware found
[✓] Launch installation for: GOAD / vmware / local
[+] Current folder /home/kali/GOAD/ansible
[+] Current LAB : GOAD
[+] Current PROVIDER : vmware
[+] Ansible command : ansible-playbook -i ../ad/GOAD/data/inventory -i ../ad/GOAD/providers/vmware/
inventory
[+] Running all the playbook to setup the lab
[+] Entering GOAD build
[+] Restart counter: 0
[✓] Running command with timeout 30min: ansible-playbook -i ../ad/GOAD/data/inventory -i ../ad/GOAD
/providers/vmware/inventory build.yml

PLAY [build all] ******************************************************************************
 [started TASK: Gathering Facts on dc01]
 [started TASK: Gathering Facts on dc02]
 [started TASK: Gathering Facts on dc03]
 [started TASK: Gathering Facts on srv02]
```

This is gonna take a while… grab a coffee ☕ or go watch something.

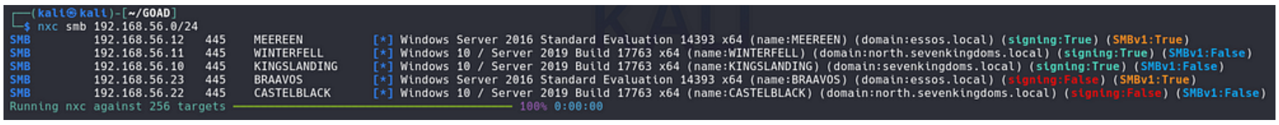
When this message appear, it all went well and now you can test it.



```
[✓] Command successfully executed
[✓] your lab : GOAD is successfully setup ! have fun ;)
Build in 74 minutes and 20 seconds.
/home/kali/GOAD
```

To test the connection, you can use netexec as following

```
nxc smb 192.168.56.0/24
```



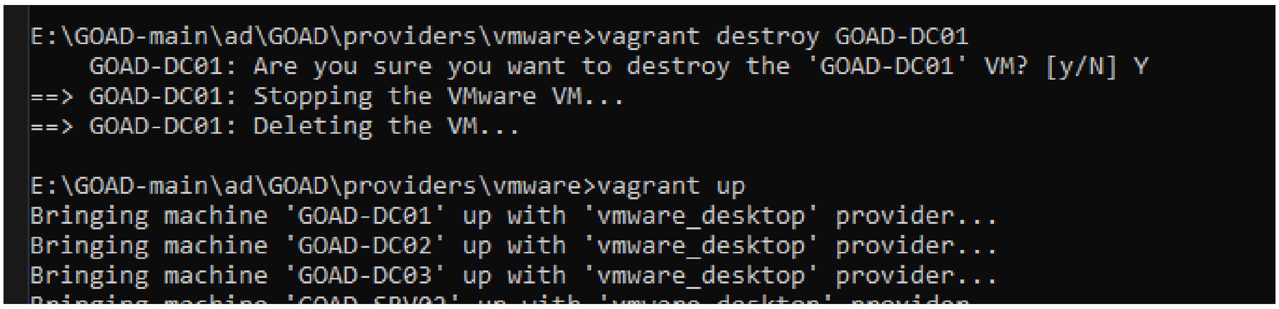
```
┌──(kali㉿kali)-[~/GOAD]
└─$ nxc smb 192.168.56.0/24
SMB         192.168.56.12   445    MEEREEN          [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:MEEREEN) (domain:essos.local) (signing:True) (SMBv1:True)
SMB         192.168.56.11   445    WINTERFELL       [*] Windows 10 / Server 2019 Build 17763 x64 (name:WINTERFELL) (domain:north.sevenkingdoms.local) (signing:True) (SMBv1:False)
SMB         192.168.56.10   445    KINGSLANDING     [*] Windows 10 / Server 2019 Build 17763 x64 (name:KINGSLANDING) (domain:sevenkingdoms.local) (signing:True) (SMBv1:False)
SMB         192.168.56.23   445    BRAAVOS          [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:BRAAVOS) (domain:essos.local) (signing:False) (SMBv1:True)
SMB         192.168.56.22   445    CASTELBLACK      [*] Windows 10 / Server 2019 Build 17763 x64 (name:CASTELBLACK) (domain:north.sevenkingdoms.local) (signing:False) (SMBv1:False)
Running nxc against 256 targets ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 100% 0:00:00
```

Congratulations! You've now setup GOAD perfectly!

TROUBLESHOOTING TIPS

If some step on Ansible fails, you can simply destroy the vm you want (i.e: GOAD-DC01) and install again with Vagrant.

```
vagrant destroy -
```



```
E:\GOAD-main\ad\GOAD\providers\vmware>vagrant destroy GOAD-DC01
    GOAD-DC01: Are you sure you want to destroy the 'GOAD-DC01' VM? [y/N] Y
==> GOAD-DC01: Stopping the VMware VM...
==> GOAD-DC01: Deleting the VM...

E:\GOAD-main\ad\GOAD\providers\vmware>vagrant up
Bringing machine 'GOAD-DC01' up with 'vmware_desktop' provider...
Bringing machine 'GOAD-DC02' up with 'vmware_desktop' provider...
Bringing machine 'GOAD-DC03' up with 'vmware_desktop' provider...
```

After that, just run **vagrant up** to download the machine then the local installation step again.
If you want to stop all machines, use **vagrant halt**.

BONUS: ELK

1. Comment all boxes and uncomment ELK on Vagrantfile — location: `\ad\GOAD\providers\vmware\Vagrantfile`

```
   Vagrant.configure("2") do |config|


ENV['VAGRANT_DEFAULT_PROVIDER'] = 'vmware_desktop'


boxes = [
# windows server 2022 : don't work for now
#{ :name => "DC01",  :ip => "192.168.56.10", :box => "StefanScherer/windows_2022",
:box_version => "2021.08.23", :os => "windows"},
# windows server 2019
# { :name => "GOAD-DC01",  :ip => "192.168.56.10", :box =>
"StefanScherer/windows_2019", :box_version => "2021.05.15", :os => "windows"},
# windows server 2019
#{ :name => "GOAD-DC02",  :ip => "192.168.56.11", :box =>
"StefanScherer/windows_2019", :box_version => "2021.05.15", :os => "windows"},
# windows server 2016
#{ :name => "GOAD-DC03",  :ip => "192.168.56.12", :box =>
"StefanScherer/windows_2016", :box_version => "2017.12.14", :os => "windows"},
# windows server 2019
#{ :name => "SRV01", :ip => "192.168.56.21", :box => "StefanScherer/windows_2019",
:box_version => "2020.07.17", :os => "windows"},
# windows server 2019
# { :name => "GOAD-SRV02", :ip => "192.168.56.22", :box =>
"StefanScherer/windows_2019", :box_version => "2020.07.17", :os => "windows"},
# windows server 2016
#{ :name => "GOAD-SRV03", :ip => "192.168.56.23", :box =>
"StefanScherer/windows_2016", :box_version => "2019.02.14", :os => "windows"}


# ELK
 { :name => "GOAD-ELK", :ip => "192.168.56.50", :box => "bento/ubuntu-18.04", :os
=> "linux",
  :forwarded_port => [
    {:guest => 22, :host => 2210, :id => "ssh"}
  ]
}
]


  config.vm.provider "virtualbox"do |v|
    v.memory = 4000
    v.cpus = 2
  end


  config.vm.provider "vmware_desktop"do |v|
    v.vmx["memsize"] = "4000"
    v.vmx["numvcpus"] = "2"
# v.force_vmware_license = "workstation"  # force the licence for fix some vagrant
plugin issue
  end
```

```
# disable rdp forwarded port inherited from StefanScherer box
  config.vm.network :forwarded_port, guest: 3389, host: 3389, id: "rdp",
auto_correct: true, disabled: true



# no autoupdate if vagrant-vbguest is installed
if Vagrant.has_plugin?("vagrant-vbguest") then
    config.vbguest.auto_update = false
  end



  config.vm.boot_timeout = 600
  config.vm.graceful_halt_timeout = 600
  config.winrm.retry_limit = 30
  config.winrm.retry_delay = 10



  boxes.each do |box|
    config.vm.define box[:name] do |target|
# BOX
      target.vm.provider "virtualbox"do |v|
        v.name = box[:name]
        v.customize ["modifyvm", :id, "--groups", "/GOAD"]
      end
      target.vm.box_download_insecure = box[:box]
      target.vm.box = box[:box]
if box.has_key?(:box_version)
        target.vm.box_version = box[:box_version]
      end



# issues/49
      target.vm.synced_folder '.', '/vagrant', disabled: true



# IP
      target.vm.network :private_network, ip: box[:ip]



# OS specific
if box[:os] == "windows"
        target.vm.guest = :windows
        target.vm.communicator = "winrm"
        target.vm.provision :shell, :path => "../../../../vagrant/Install-
WMF3Hotfix.ps1", privileged: false
        target.vm.provision :shell, :path =>
"../../../../vagrant/ConfigureRemotingForAnsible.ps1", privileged: false
```

```
# fix ip for vmware
if ENV['VAGRANT_DEFAULT_PROVIDER'] == "vmware_desktop"
          target.vm.provision :shell, :path => "../../../../vagrant/fix_ip.ps1",
privileged: false, args: box[:ip]
        end



else
        target.vm.communicator = "ssh"
      end



if box.has_key?(:forwarded_port)
# forwarded port explicit
        box[:forwarded_port] do |forwarded_port|
          target.vm.network :forwarded_port, guest: forwarded_port[:guest], host:
forwarded_port[:host], host_ip: "127.0.0.1", id: forwarded_port[:id]
        end
      end

            end  endend
```

2. `vagrant up` to install ELK. When it finishes, revert to the original file again:

```
Vagrant.configure("2") do |config|



ENV['VAGRANT_DEFAULT_PROVIDER'] = 'vmware_desktop'



boxes = [
# windows server 2022 : don't work for now
#{ :name => "DC01",  :ip => "192.168.56.10", :box => "StefanScherer/windows_2022",
:box_version => "2021.08.23", :os => "windows"},
# windows server 2019
  { :name => "GOAD-DC01",  :ip => "192.168.56.10", :box =>
"StefanScherer/windows_2019", :box_version => "2021.05.15", :os => "windows"},
# windows server 2019
  { :name => "GOAD-DC02",  :ip => "192.168.56.11", :box =>
"StefanScherer/windows_2019", :box_version => "2021.05.15", :os => "windows"},
# windows server 2016
  { :name => "GOAD-DC03",  :ip => "192.168.56.12", :box =>
"StefanScherer/windows_2016", :box_version => "2017.12.14", :os => "windows"},
# windows server 2019
#{ :name => "SRV01", :ip => "192.168.56.21", :box => "StefanScherer/windows_2019",
:box_version => "2020.07.17", :os => "windows"},
# windows server 2019
  { :name => "GOAD-SRV02", :ip => "192.168.56.22", :box =>
"StefanScherer/windows_2019", :box_version => "2020.07.17", :os => "windows"},
# windows server 2016
  { :name => "GOAD-SRV03", :ip => "192.168.56.23", :box =>
"StefanScherer/windows_2016", :box_version => "2019.02.14", :os => "windows"}



# ELK
# { :name => "GOAD-ELK", :ip => "192.168.56.50", :box => "bento/ubuntu-18.04", :os
=> "linux",
#   :forwarded_port => [
#     {:guest => 22, :host => 2210, :id => "ssh"}
#   ]
# }
]



  config.vm.provider "virtualbox"do |v|
    v.memory = 4000
    v.cpus = 2
  end



  config.vm.provider "vmware_desktop"do |v|
    v.vmx["memsize"] = "4000"
    v.vmx["numvcpus"] = "2"
# v.force_vmware_license = "workstation"  # force the licence for fix some vagrant
plugin issue
  end
```

```
# disable rdp forwarded port inherited from StefanScherer box
  config.vm.network :forwarded_port, guest: 3389, host: 3389, id: "rdp",
auto_correct: true, disabled: true



# no autoupdate if vagrant-vbguest is installed
if Vagrant.has_plugin?("vagrant-vbguest") then
    config.vbguest.auto_update = false
  end



  config.vm.boot_timeout = 600
  config.vm.graceful_halt_timeout = 600
  config.winrm.retry_limit = 30
  config.winrm.retry_delay = 10



  boxes.each do |box|
    config.vm.define box[:name] do |target|
# BOX
      target.vm.provider "virtualbox"do |v|
        v.name = box[:name]
        v.customize ["modifyvm", :id, "--groups", "/GOAD"]
      end
      target.vm.box_download_insecure = box[:box]
      target.vm.box = box[:box]
if box.has_key?(:box_version)
        target.vm.box_version = box[:box_version]
      end



# issues/49
      target.vm.synced_folder '.', '/vagrant', disabled: true



# IP
      target.vm.network :private_network, ip: box[:ip]



# OS specific
if box[:os] == "windows"
        target.vm.guest = :windows
        target.vm.communicator = "winrm"
        target.vm.provision :shell, :path => "../../../../vagrant/Install-
WMF3Hotfix.ps1", privileged: false
        target.vm.provision :shell, :path =>
"../../../../vagrant/ConfigureRemotingForAnsible.ps1", privileged: false
```

```
# fix ip for vmware
if ENV['VAGRANT_DEFAULT_PROVIDER'] == "vmware_desktop"
          target.vm.provision :shell, :path => "../../../../vagrant/fix_ip.ps1",
privileged: false, args: box[:ip]
        end



else
        target.vm.communicator = "ssh"
      end



if box.has_key?(:forwarded_port)
# forwarded port explicit
        box[:forwarded_port] do |forwarded_port|
          target.vm.network :forwarded_port, guest: forwarded_port[:guest], host:
forwarded_port[:host], host_ip: "127.0.0.1", id: forwarded_port[:id]
        end
      end

            end  endend
```

3. Go to your Kali > GOAD folder and edit `goad.sh` and add `elk.yml` to `ANSIBLE_PLAYBOOKS`

```
ANSIBLE_PLAYBOOKS=
```

4. Run the install again with the following

```
./goad.sh -t install -l GOAD -p vmware -m  -a -r elk.yml
```

5. Do **vagrant up** again

6. Access your ELK at `http://192.168.56.50:5601/`

Have fun!