

CPE Automation

CPE Automation

Use this procedure to create NF Gateway enabled equipment automatically.

1. Summary

This guide will cover the following sections

- Create an automation VM by using OVA provided by NetFoundry. This is a one-time setup.
- Install CentOS7 OS on the CPE box.
- Run the automation script from the automation VM to setup the CPE box

This guide will not cover

- This guide will **only** cover deployment of OVA with VMWare6.7, it will not cover all hypervisor out there. However, the provided OVA will work with VM Workstation 12 or EXSi 6.5 or later and VirtualBox.
- This guide will not cover how to setup installation media of Cent7 OS. At the end of guide, it will describe where to find the OS image and some tools.

2. Create Automation VM



Note

This procedure only needs to execute once for all CPE boxes. It is recommended to create this VM using VMWare hypervisor.

Obtain the CPE-Automation OVA

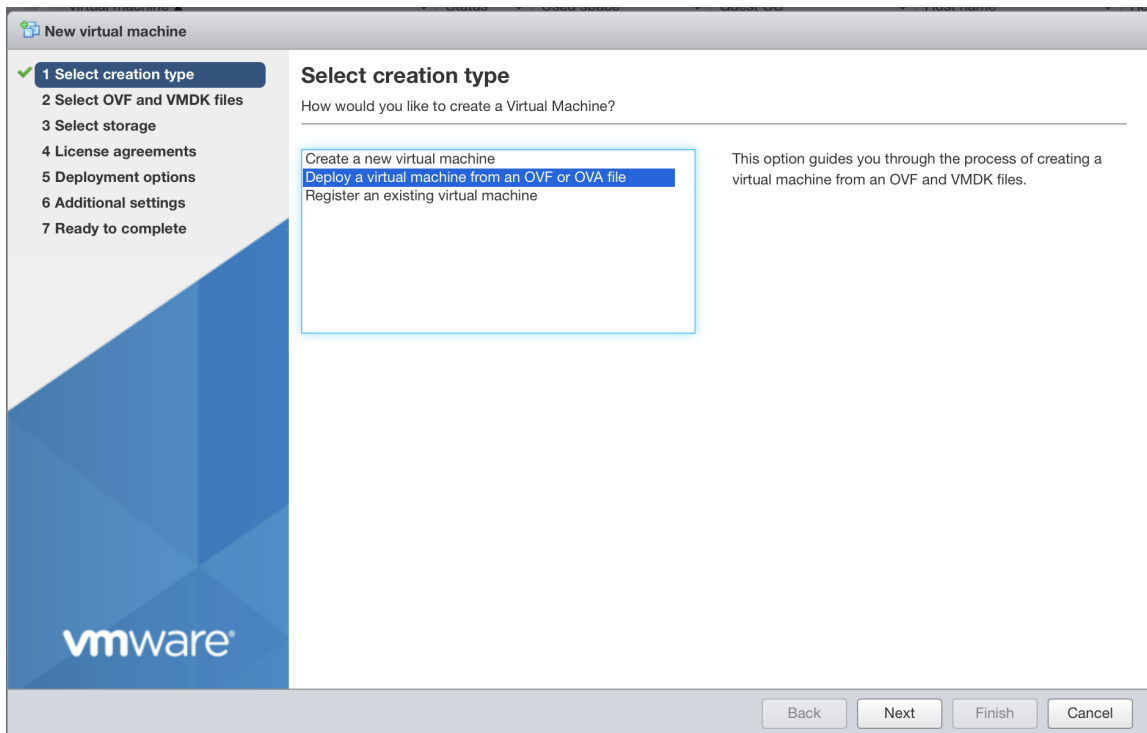


Todo

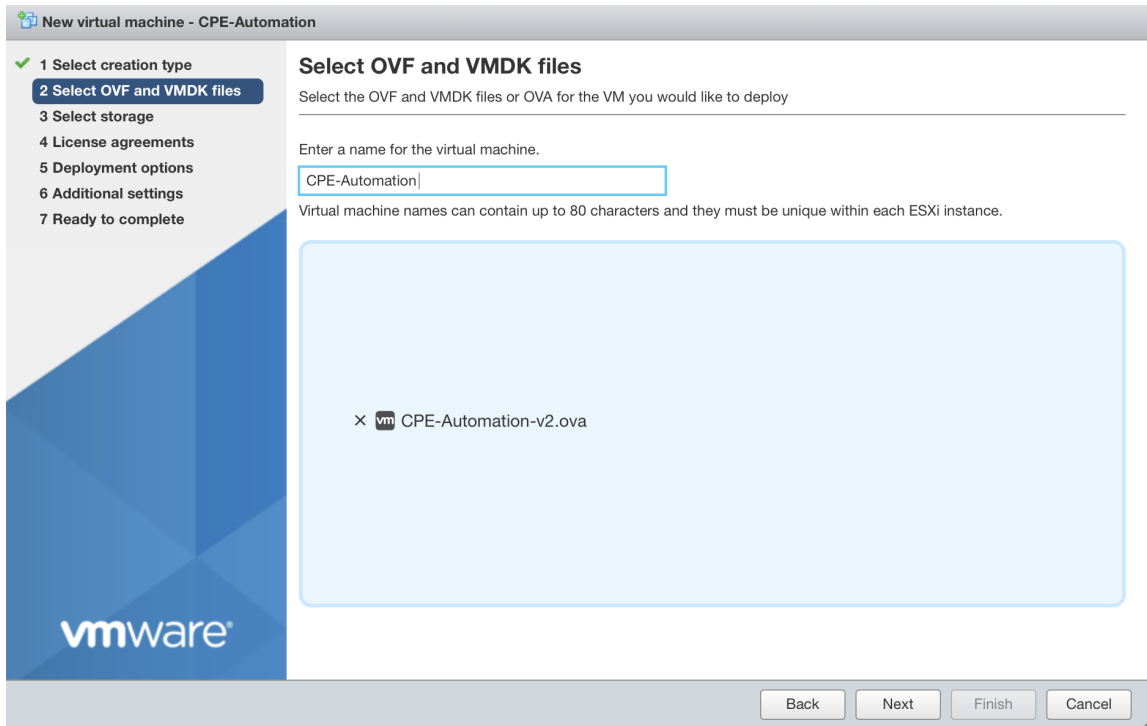
We will need to put the OVA somewhere customer can download.

Create the VM with the OVA

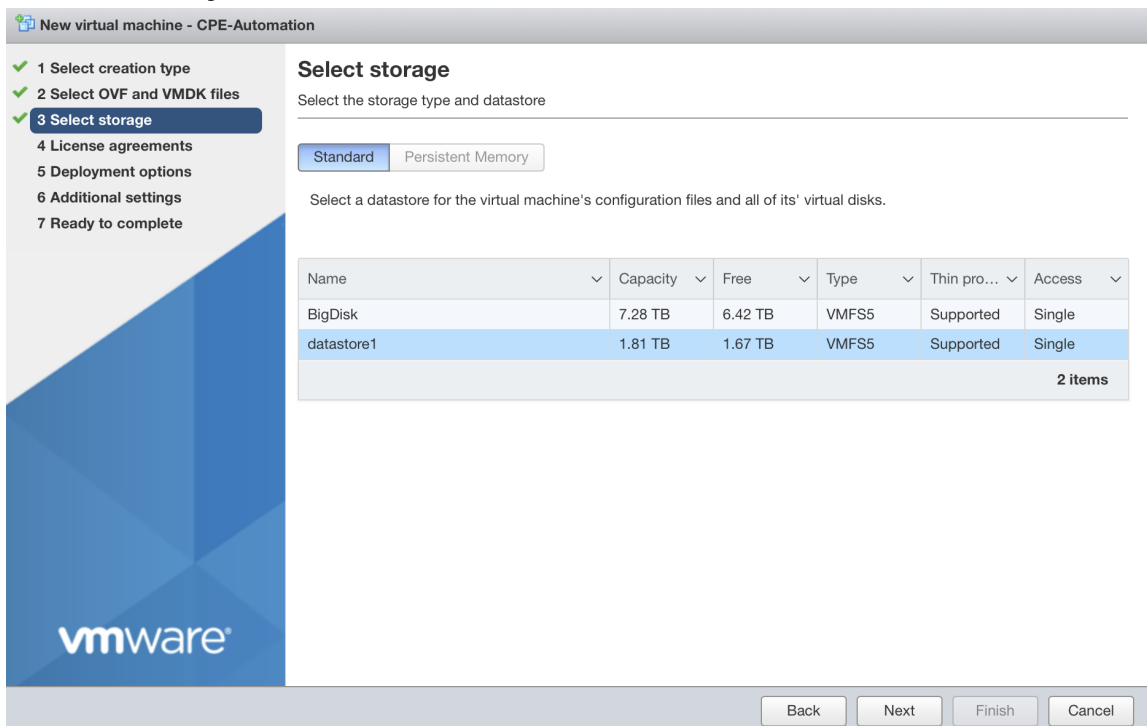
From your hypervisor, create a VM and use the **Deploy from OVA** option



Hit "Next", and you can choose your OVA image and give a name to the VM you are creating

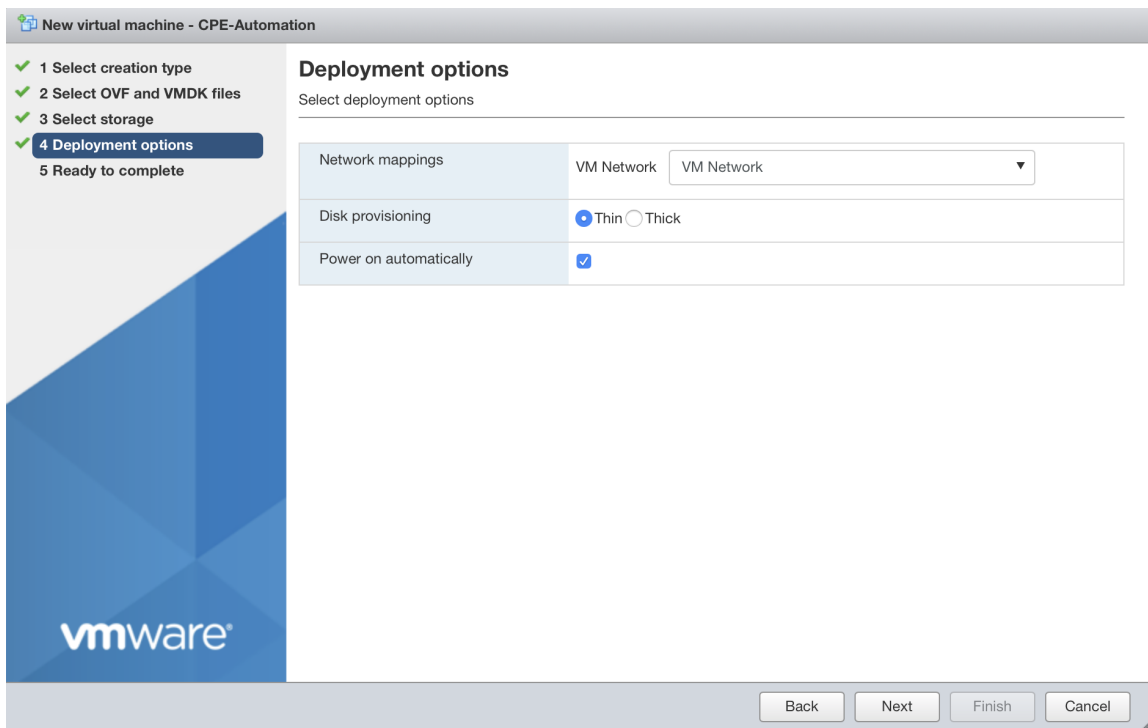


Hit "Next", it will ask you which storage (Disk) you want to put your VM. Choose one that suits you.

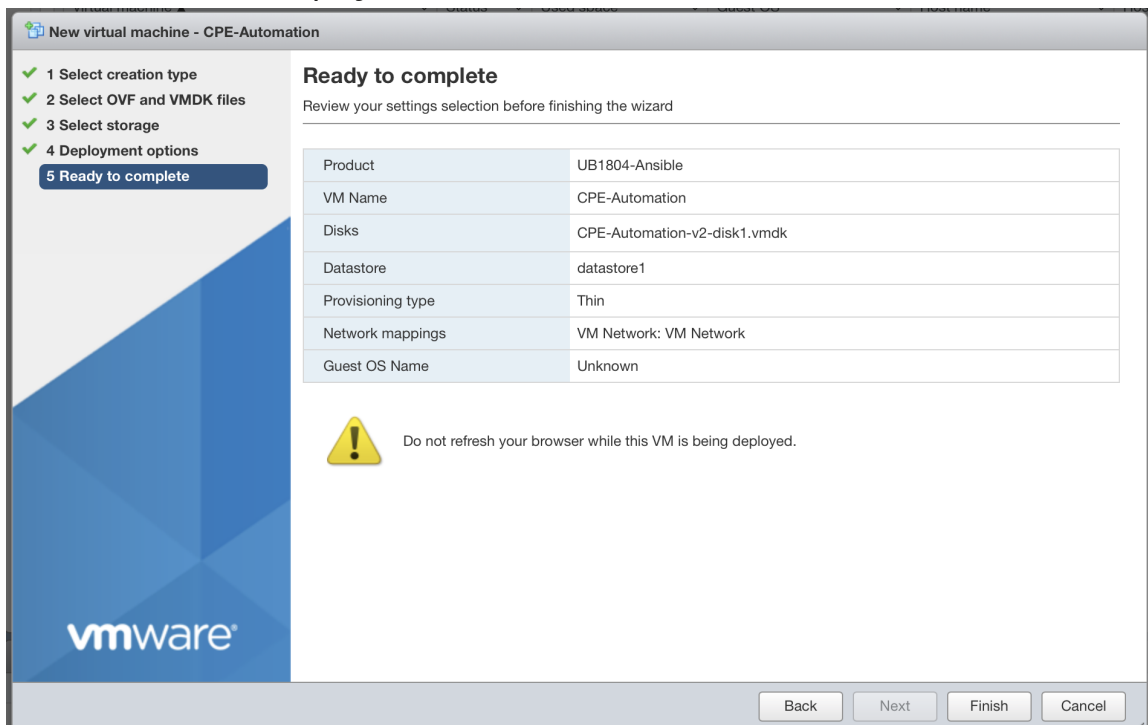


Hit "Next" and choose your Network. (Hint, "VM Network" is your default network, that usually is a good choice). For "Disk provisioning", you can leave it

at the default choice of "Thin".

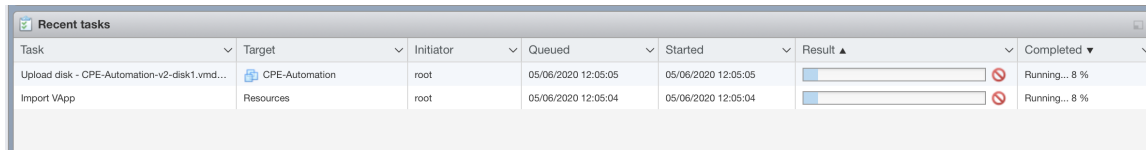


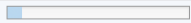

Hit "Next", and you are ready to deploy the OVA. Review the content carefully and hit "Finish" to deploy it.



After you hit "Finish", on the Task window, you should notice the VM been created. Once the it reaches 100%, your VM is created. And it should

automatically start after the deployment is done.



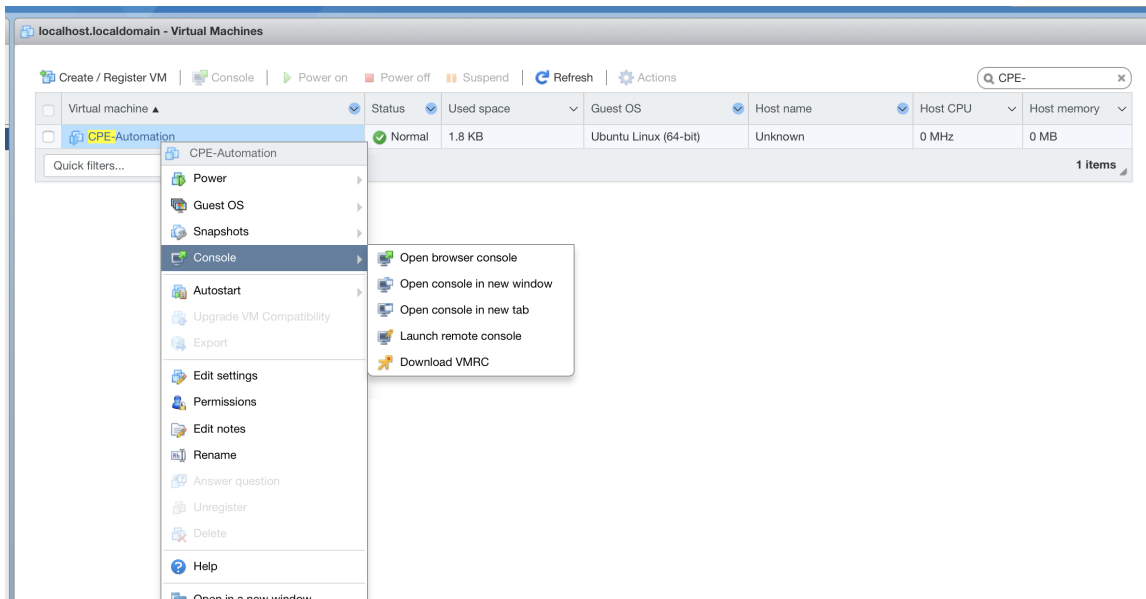
Task	Target	Initiator	Queued	Started	Result	Completed
Upload disk - CPE-Automation-v2-disk1.vmd...	CPE-Automation	root	05/06/2020 12:05:05	05/06/2020 12:05:05		Running... 8 %
Import VApp	Resources	root	05/06/2020 12:05:04	05/06/2020 12:05:04		Running... 8 %

Login and Check the automation VM

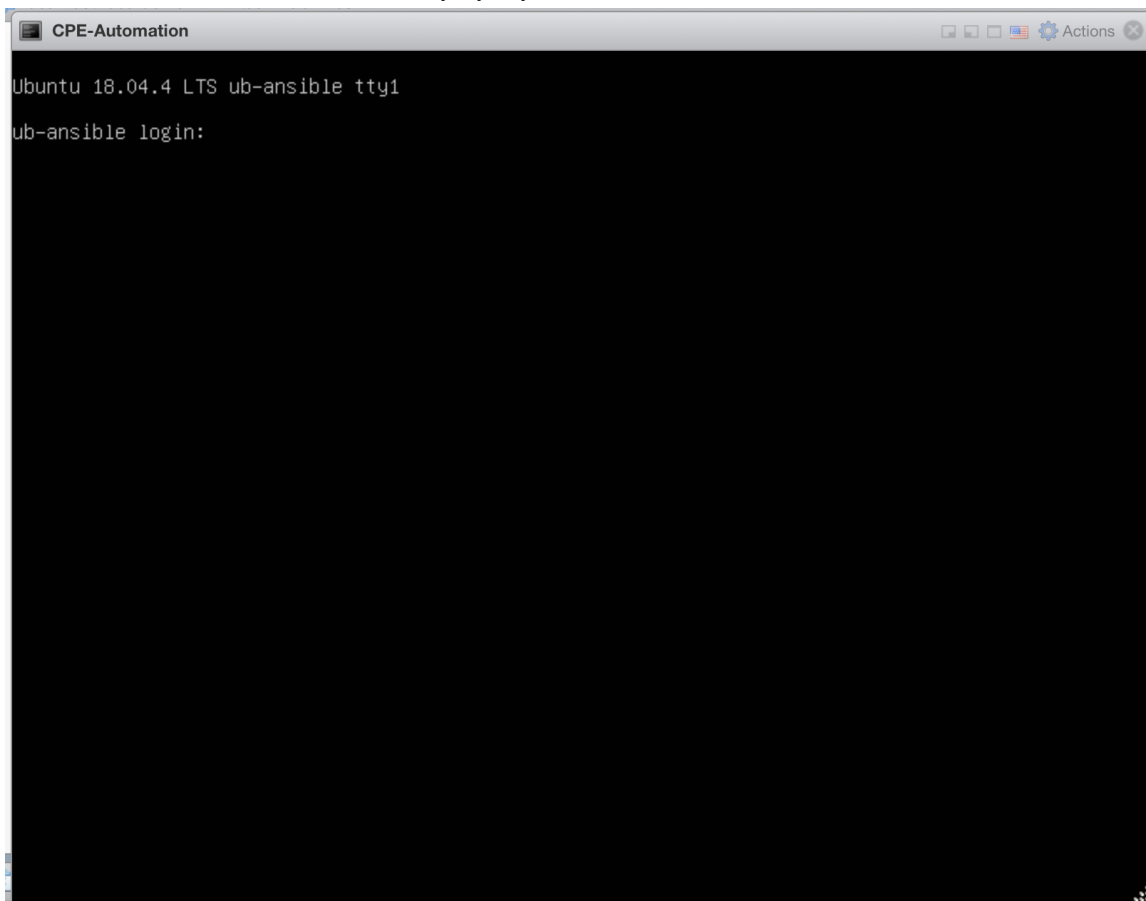
Once the VM is completely deployed, we need to make sure the VM is setup correctly.

Go to the main VM window, right click on your VM,

on the popup menu, choose "**Console**" -> "**Open browser console**".



You will see a console window pop up like this:



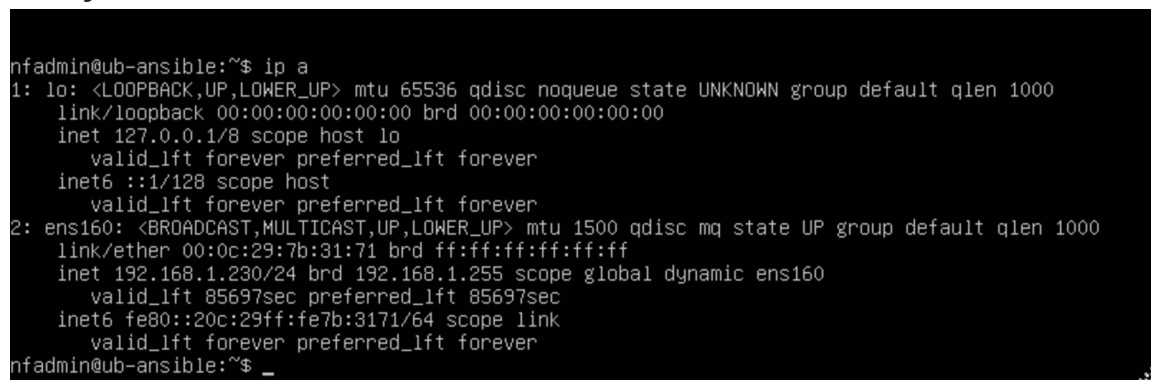
```
CPE-Automation
Ubuntu 18.04.4 LTS ub-ansible tty1
ub-ansible login:
```

Login to the console by using credential

Username: **nfadmin**

Password: **nfadmin**

Check the IP setting by issuing "**ip a**" command. If you see a valid IP address, then your VM is on a network.



```
nfadmin@ub-ansible:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:7b:31:71 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.230/24 brd 192.168.1.255 scope global dynamic ens160
        valid_lft 85697sec preferred_lft 85697sec
    inet6 fe80::20c:29ff:fe7b:3171/64 scope link
        valid_lft forever preferred_lft forever
nfadmin@ub-ansible:~$ _
```

You can verify ssh access to the VM by using a ssh enabled terminal:

```
> ssh nfadmin@[ip_address_of_the_automation_vm]
```

Conclusion

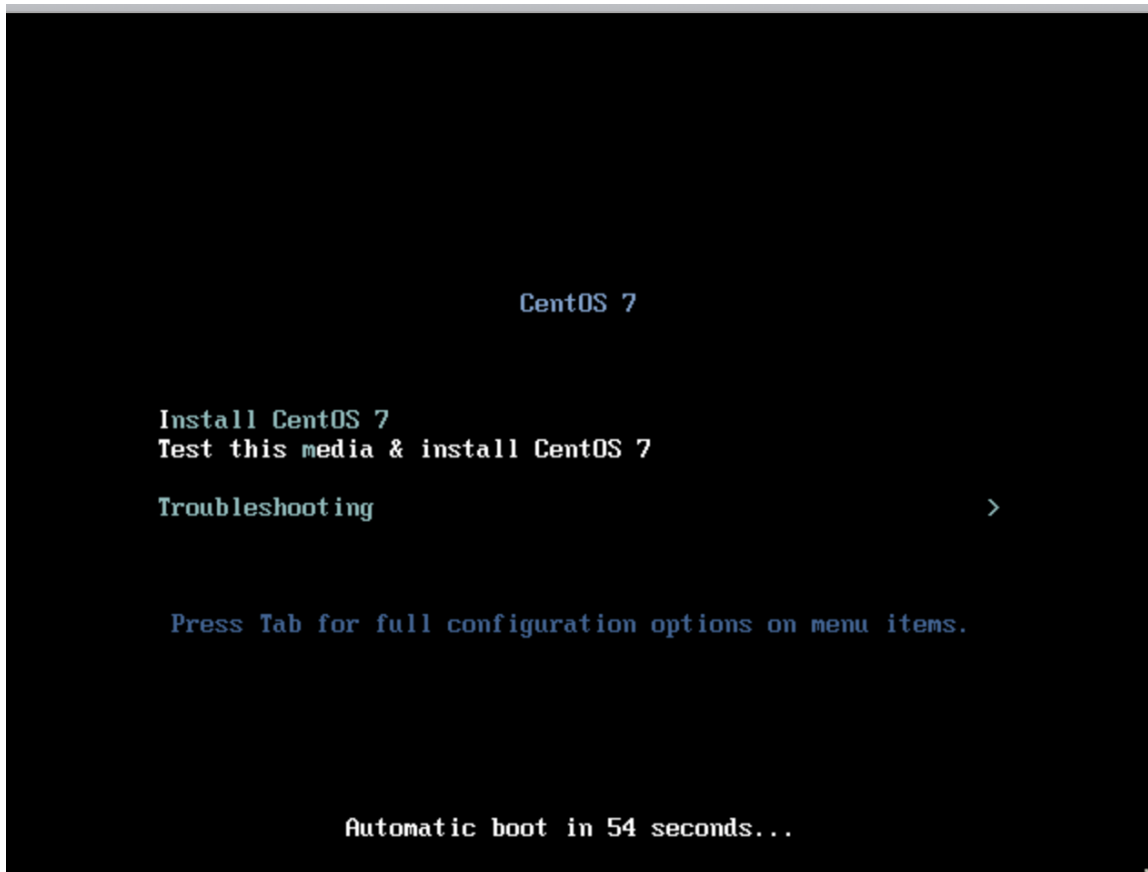
This is the end of deploying the automation VM.

3. Installing CentOS 7 on the CPE

Note

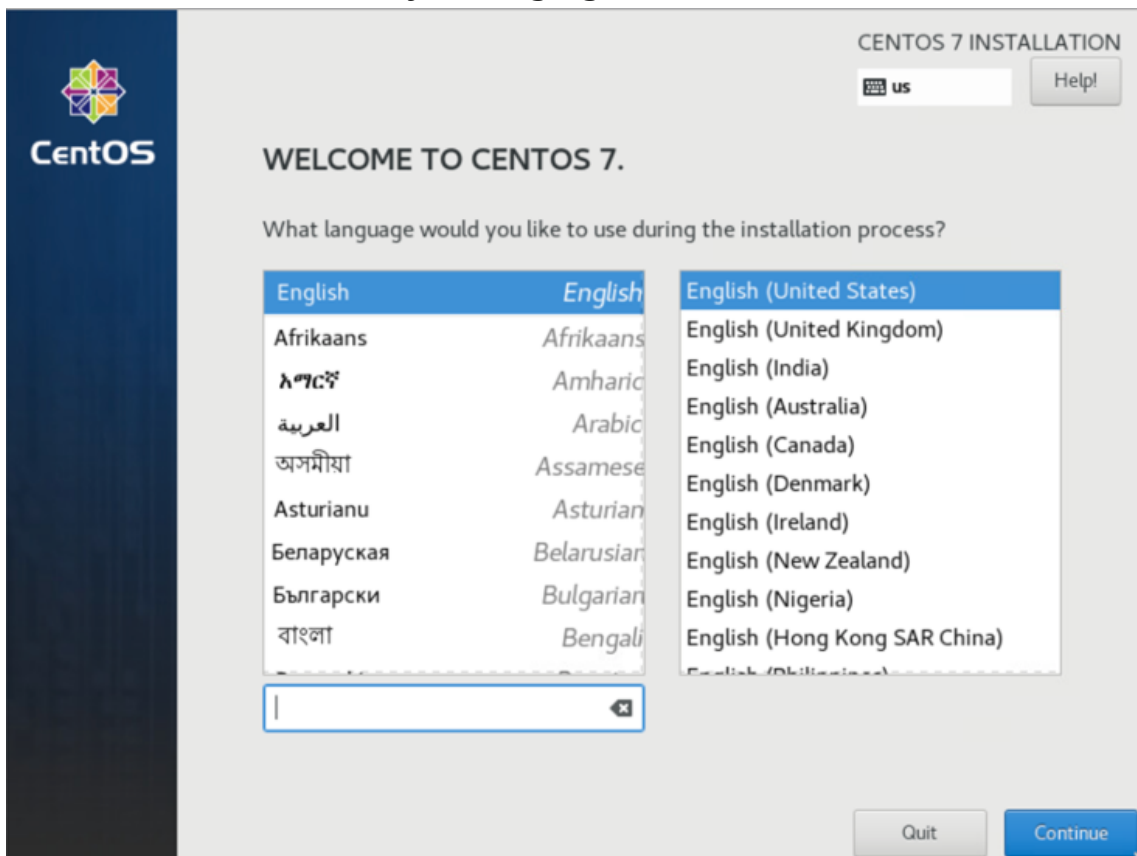
Have this ready before you start: You will need a CentOS 7 installation media before you start.

Insert an Ethernet Cable into your CPE and bootup your CPE via the installation media, you will encounter the first screen:



Choose "**Install CentOS 7**" to continue.

On the next screen, Choose your Language. And hit "**Continue**"



The "**INSTALLATION SUMMARY**" screen will appear.

Check to make sure the step (1) "**SOFTWARE SELECTION**" is set to "**Minimal Install**".

Then Click on step (2) "**INSTALLATION DESTINATION**" to setup the Disk.



Once in the "**INSTALLATION DESTINATION**" screen

Choose your Disk (NOT the USB installation media)

Click on "**Automatically configure partitioning**" Then hit "**Done**" at the top

left screen to continue.

INSTALLATION DESTINATION CENTOS 7 INSTALLATION

[Done](#) us [Help!](#)

Device Selection

Select the device(s) you'd like to install to. They will be left untouched until you click on the main menu's "Begin Installation" button.

Local Standard Disks

32 GiB

VMware Virtual disk
sda / 32 GiB free

Disks left unselected here will not be touched.

Specialized & Network Disks

[Add a disk...](#)

Disks left unselected here will not be touched.

Other Storage Options

Partitioning

Automatically configure partitioning. I will configure partitioning.

I would like to make additional space available.

[Full disk summary and boot loader...](#) 1 disk selected; 32 GiB capacity; 32 GiB free [Refresh...](#)

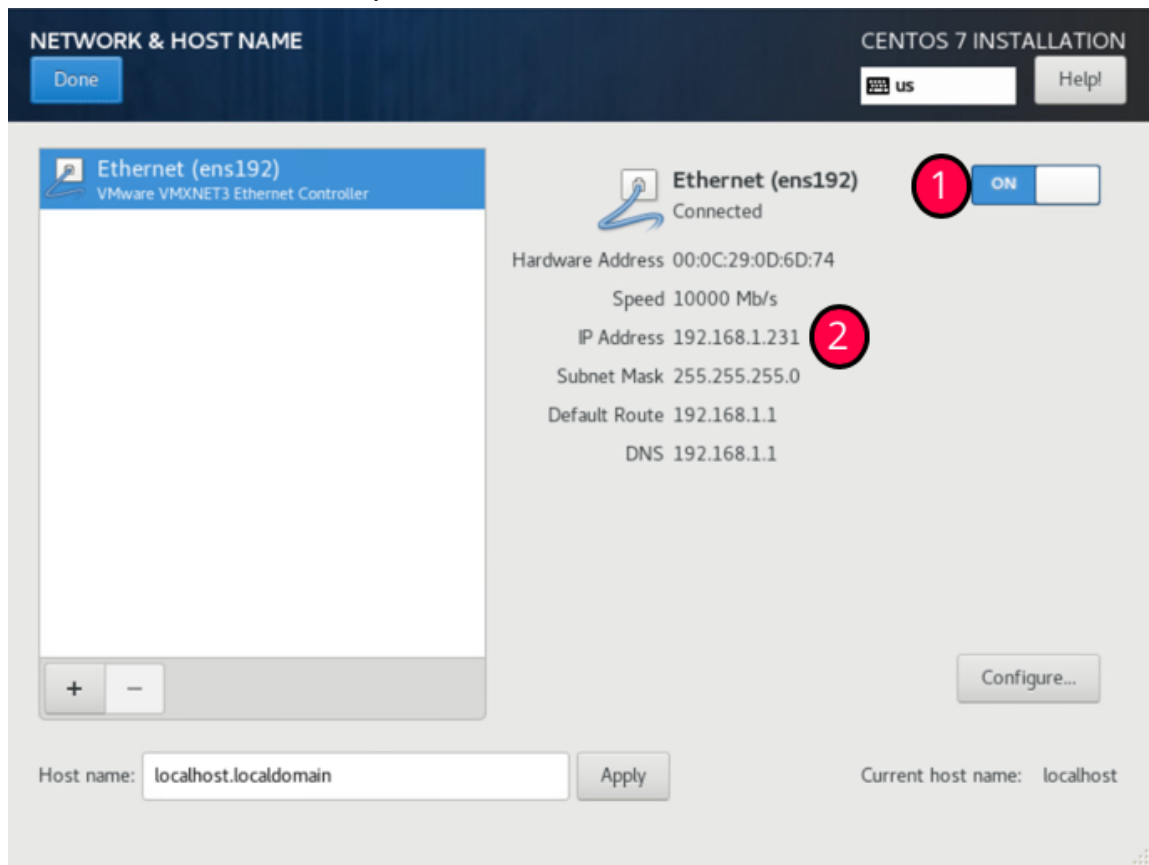
Once you are back to the "INSTALLATION SUMMARY" screen

Choose step (3) "NETWORK & HOST NAME". The following screen should appear.

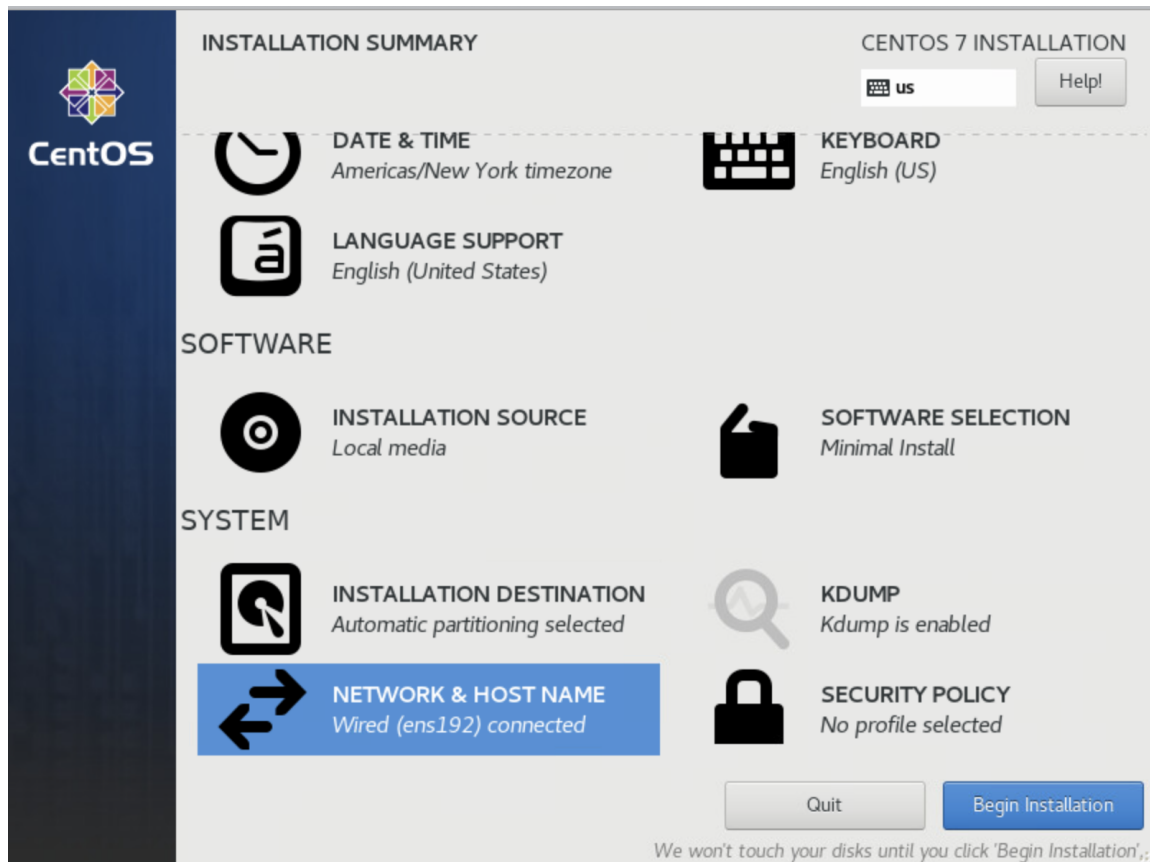
Turn on the Ethernet by hitting the button marked (1).

And then observe the IP Address appears below it (at area Marked (2)). (We will need that IP address when we run the automation).

Then hit "**Done**" at the top left screen to continue.



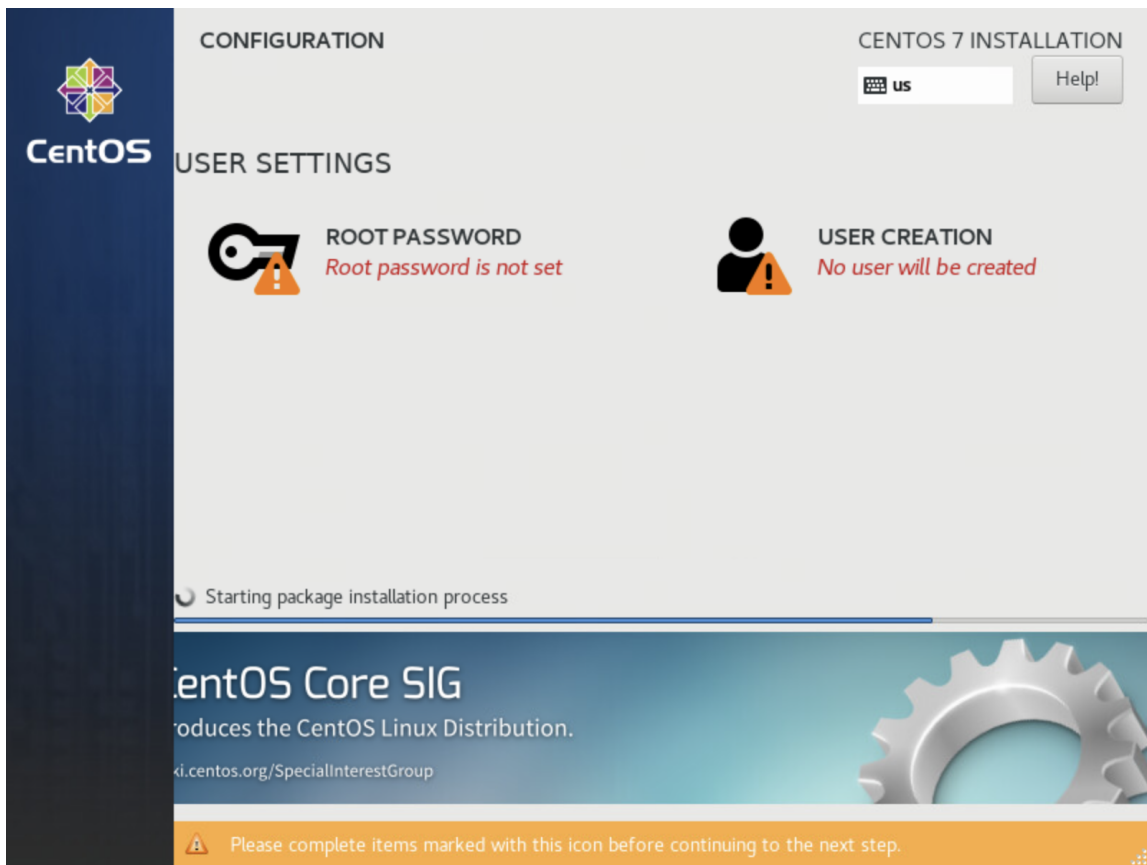
You should be back to the "INSTALLATION SUMAMRY" screen again, and you can hit "**Begin Installation**" to start the Installation.



The image shows the CentOS 7 installation summary screen. On the left is the CentOS logo. The main area is titled "INSTALLATION SUMMARY" and "CENTOS 7 INSTALLATION". At the top right, there is a language dropdown set to "us" and a "Help!" button. The summary is organized into sections: "DATE & TIME" (Americas/New York timezone), "LANGUAGE SUPPORT" (English (United States)), "KEYBOARD" (English (US)), "SOFTWARE" (INSTALLATION SOURCE: Local media; SOFTWARE SELECTION: Minimal Install), and "SYSTEM" (INSTALLATION DESTINATION: Automatic partitioning selected; KDUMP: Kdump is enabled; SECURITY POLICY: No profile selected). The "NETWORK & HOST NAME" section (Wired (ens192) connected) is highlighted with a blue background. At the bottom, there are "Quit" and "Begin Installation" buttons. A footer note reads: "We won't touch your disks until you click 'Begin Installation'."

During the installation, you need to create a user account. For our deployment, you do not need to create root Password. So, press on "**USER CREATION**" to

create an Admin user.



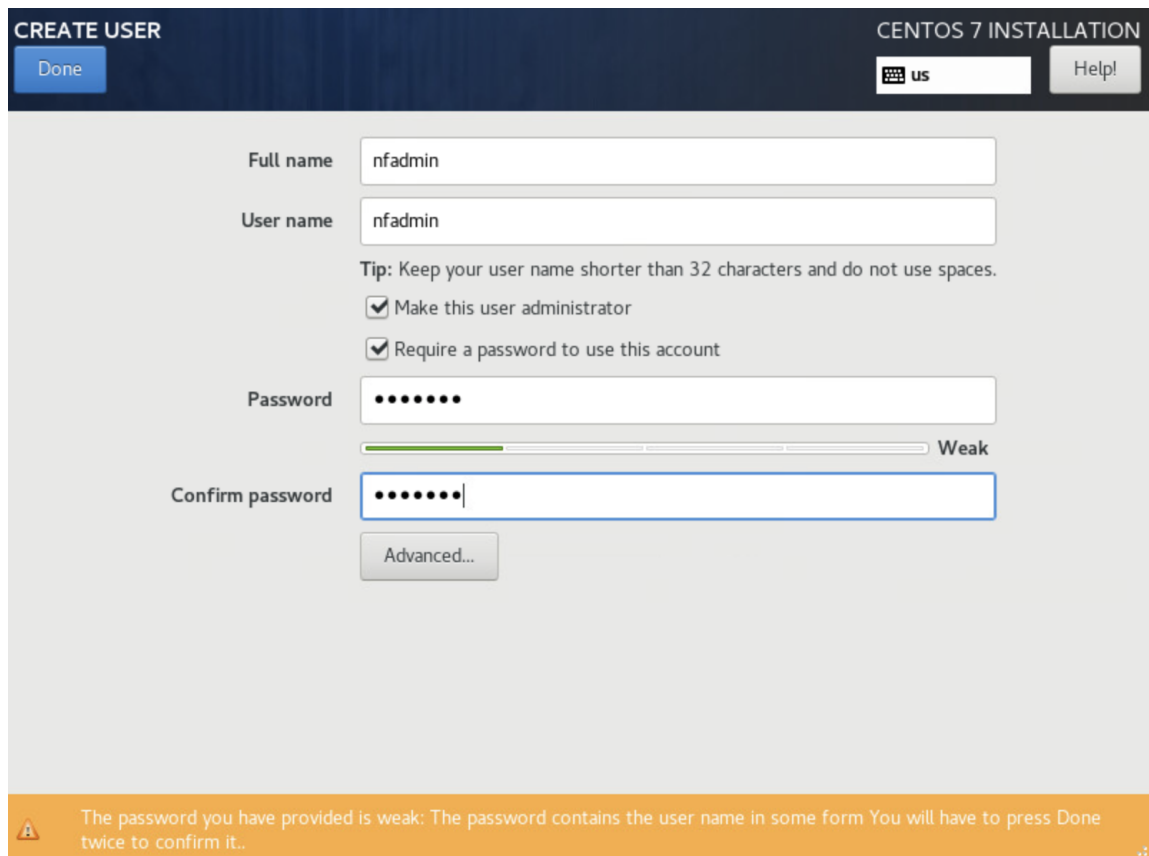
On the "**CREATE USER**" screen, you need to fill the following:

Username: **nfadmin**

click on "**Make this user administrator**"

Password: **nfadmin**

You then need to click "**Done**" twice to exit this screen.



CREATE USER CENTOS 7 INSTALLATION

Done us Help!

Full name

User name

Tip: Keep your user name shorter than 32 characters and do not use spaces.

Make this user administrator

Require a password to use this account

Password

Weak

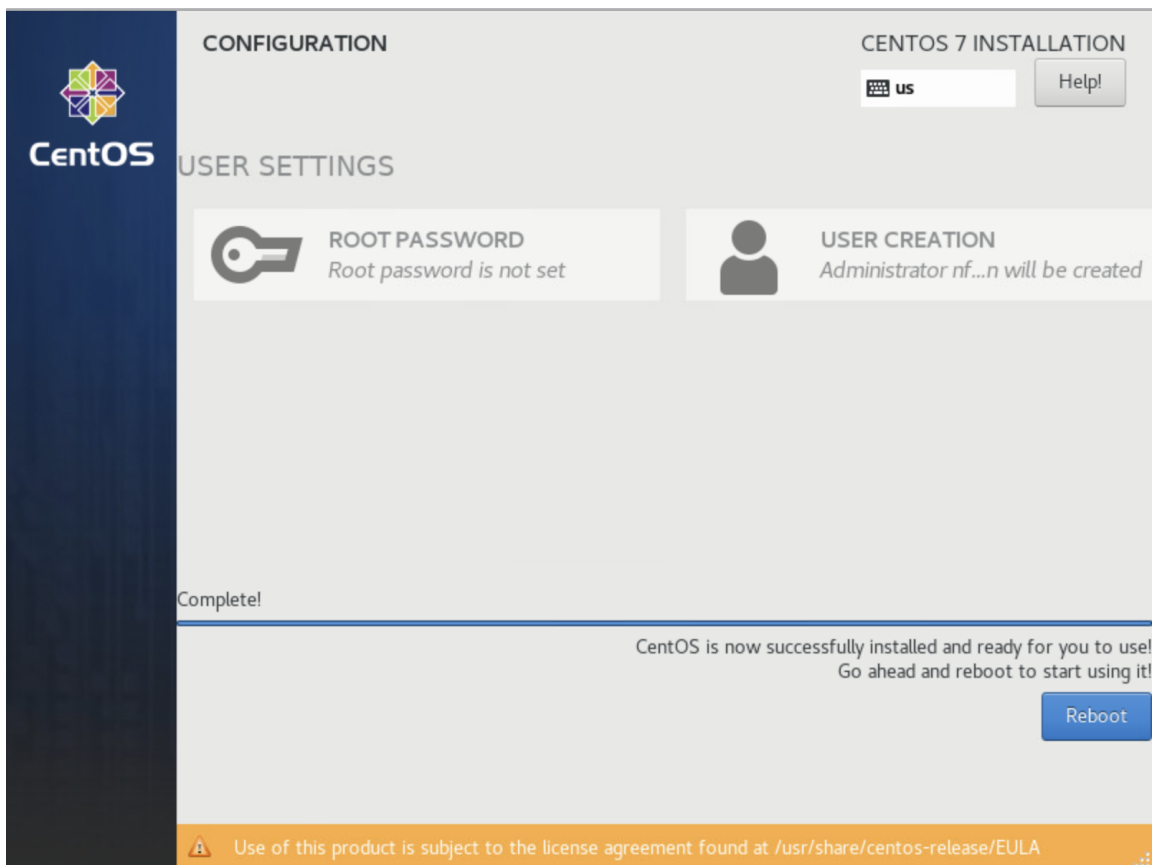
Confirm password

Advanced...

⚠ The password you have provided is weak: The password contains the user name in some form You will have to press Done twice to confirm it..

You will be sent back to the installation screen, wait for it to complete installation, and the "**Reboot**" button will appear for you to restart the CPE with

the CentOS installed.



Conclusion

This is the end of installing CentOS 7 on the CPE box.

4. Run Automation to setup the CPE box

Note

You will need the IP address of your automation VM and the IP address of your CPE to continue this step

Connect to your automation VM via ssh from a terminal

```
> ssh nfadmin@[ip_address_of_the_automation_vm]
```

Login to the VM by using password: **nfadmin**

Start the automation by issuing the following command:

```
> ./setup-nfnbox.bash [ip_address_of_cpe]
```

The automation will prompt you to enter

"SSH password" to login to the CPE box (**nfadmin**)

"BECOME password" (hit <ENTER> key)

```
nfadmin@ub-ansible:~$ ./setup-nfnbox.bash 192.168.1.184
SSH password:
BECOME password[defaults to SSH password]: _
```

The automation will take a few minutes to complete. At the end of automation, you will see message like this:

```
PLAY RECAP
*****
10.111.111.1      : ok=6    changed=3    unreachable=0
failed=0  skipped=0  rescued=0    ignored=0
192.168.1.184   : ok=35   changed=28   unreachable=0
failed=0  skipped=2  rescued=0    ignored=0
```

Conclusion

The CPE is now setup and ready.

5. CentOS 7 Installation Media

Disclaimer

There are many ways to obtain and setup the installation media. If you never set one up before, the quickest and easiest way to create one is by downloading the OS image and burn it to a USB by using disk utility.

CentOS 7 image

You can obtain a copy of OS image by visiting centos.org. But since you need to get a CentOS 7 image (not the latest CentOS 8), here is a quick link to Cent7OS mirror sites:

```
http://isoredirect.centos.org/centos/7/isos/x86\_64/
```

Recommend download the "CentOS-7-x86_64-DVD-xxxx.iso" (around 4.5G). This is the image tested. Since we use minimal installation from CentOS 7, so the minimal image should work also "CentOS-7-x86_64-Minimal-xxxx.iso" (around 1G)

Burn Image to a USB stick

You can burn the image to a USB stick by using Rufus (if you are on a PC). You can find many tutorials on the internet if you have trouble