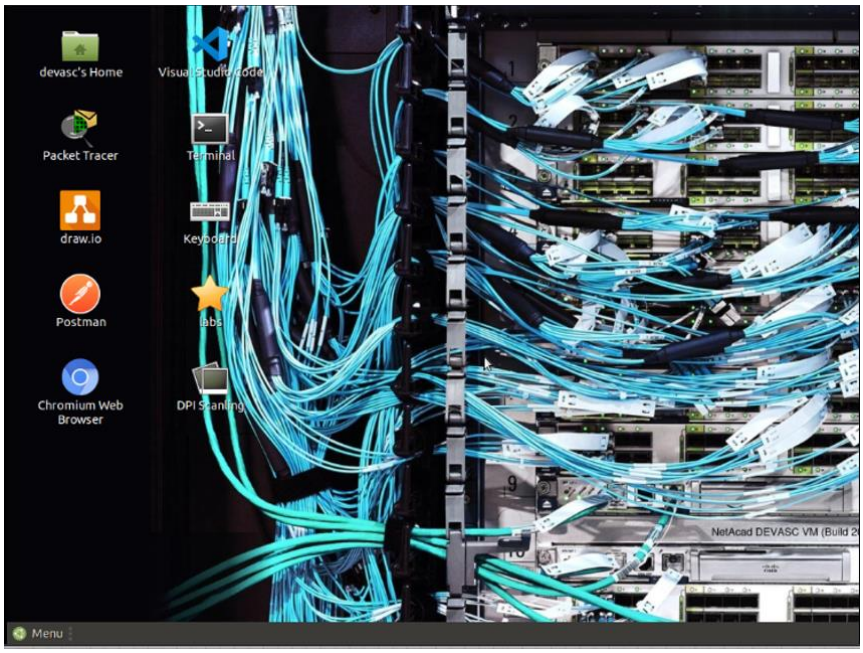
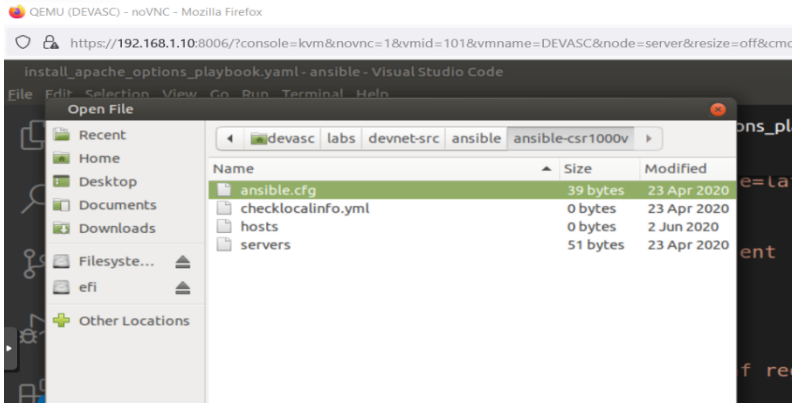
Lampiran Hasil Pengujian Modul 7.4.7 Di Proxmox

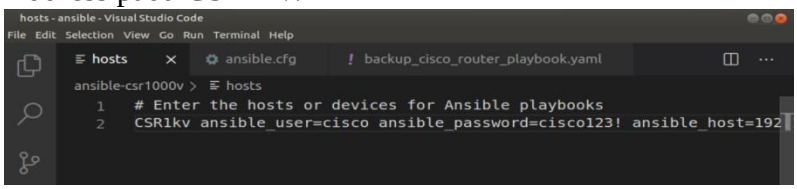
1. Jalankan Devasc Virtual Machine.



2. Jalankan CSR1000v Virtual Machine
   Membuka directory ansible di visual studio code, Bukalah pada direktori devasc/labs/devnet-src/ansible/ansible-csr1000v, lalu pilih open



3. Edit file ansiblem pada file hosts akan di isikan username dan password serta IP Address pada CSR1kv.



4. menampilkan versi ansible

```
devasc@labvm:~/labs/devnet-src/ansible$ ansible --version
ansible 2.9.9
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/home/devasc/.ansible/plugins/modules', '/us
r/share/ansible/plugins/modules']
  ansible python module location = /home/devasc/.local/lib/python3.8/site-packag
es/ansible
  executable location = /home/devasc/.local/bin/ansible
  python version = 3.8.2 (default, Apr 27 2020, 15:53:34) [GCC 9.3.0]
devasc@labvm:~/labs/devnet-src/ansible$
```

5. Menampilkan file bawaan ansible.cfg

```
devasc@labvm: ~/labs/devnet-src/ansible
File  Edit  View  Search  Terminal  Help
devasc@labvm:~/labs/devnet-src/ansible$ cat /etc/ansible/ansible.cfg | more
# config file for ansible -- https://ansible.com/
# ===============================================

# nearly all parameters can be overridden in ansible-playbook
# or with command line flags. ansible will read ANSIBLE_CONFIG,
# ansible.cfg in the current working directory, .ansible.cfg in
# the home directory or /etc/ansible/ansible.cfg, whichever it
# finds first

[defaults]

# some basic default values...

#inventory      = /etc/ansible/hosts
#library        = /usr/share/my_modules/
#module_utils   = /usr/share/my_module_utils/
#remote_tmp     = ~/.ansible/tmp
#local_tmp      = ~/.ansible/tmp
#plugin_filters_cfg = /etc/ansible/plugin_filters.yml
#forks          = 5
#poll_interval  = 15
#sudo_user      = root
#ask_sudo_pass = True
#ask_pass      = True
#transport      = smart
#remote_port    = 22
#module_lang    = C
#module_set_locale = False
```

6. Membuka directory ansible-csr1000v

```
devasc@labvm:~/labs/devnet-src/ansible$ cd ansible-csr1000v/
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu  hosts - ansible - Visual ...  devasc@labvm: ~/labs...
```

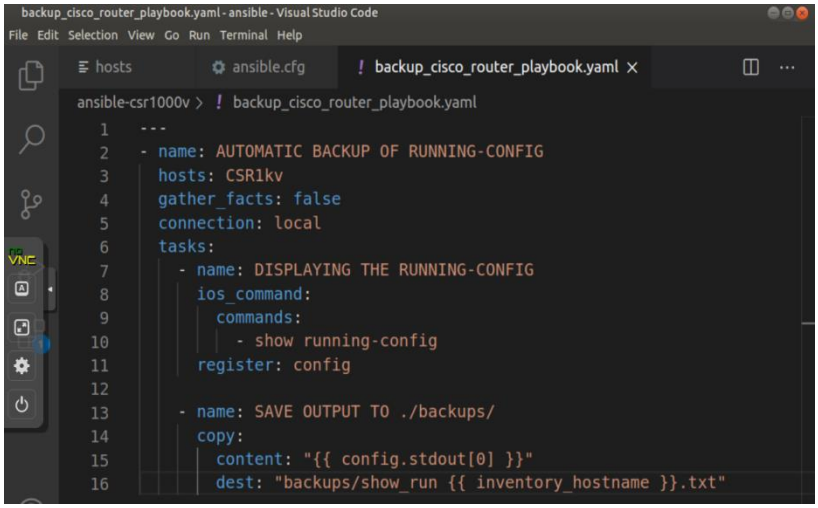
7. Membuka file ansible.cfg

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$  cat ansible.cfg
# Add to this file for the Ansible lab
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu  hosts - ansible - Visual ...  devasc@labvm: ~/labs...
```

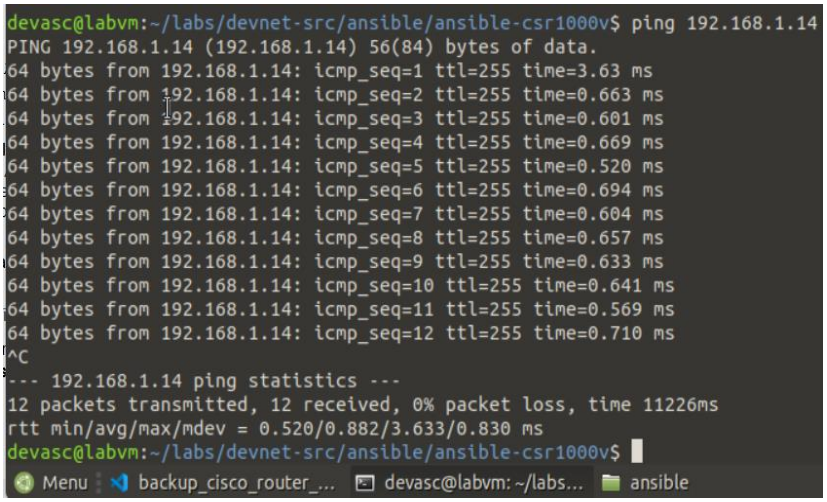
8. edit file ansible.cfg Masuk pada directory /ansible-csr1000v/ansible.cfg pada Visual Studio Code, Gunakan script ini pada file ansible.cfg

```
ansible.cfg - ansible - Visual Studio Code
File  Edit  Selection  View  Go  Run  Terminal  Help
hosts    ansible.cfg ×
ansible-csr1000v > ansible.cfg
1  # Add to this file for the Ansible lab
2  # config file for ansible-csr1000v
3  [defaults]
4  # Use local hosts file in this folder
5  inventory=./hosts
6  host_key_checking = False # Don't worry about RSA Fingerprints
7  retry_files_enabled = False # Do not create them
8  deprecation_warnings = False # Do not show warnings
```

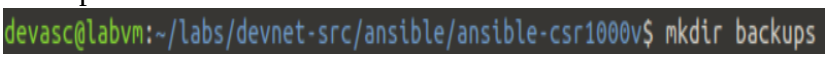
9. Menggunakan ansible sabgai konfigurasi cadangan, pertama membuat ansible playbook dengan nama backup_cisco_router_playbook.yaml



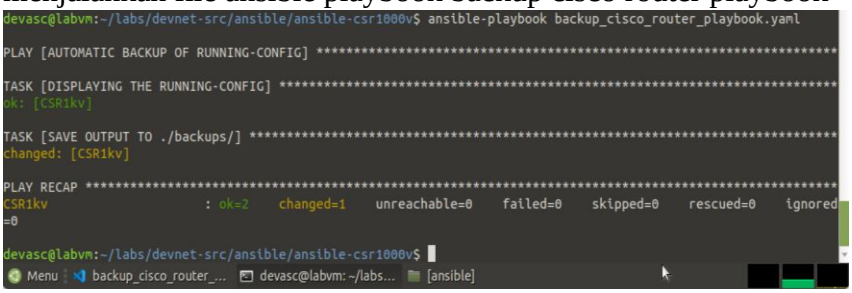
10. Jalankan CSR1000v VM, lakukan ping ke CSR1000v VM untuk menghetikan ping tekan CTRL+ C



11. buat file baru dengan nama backups ditempatkan pada directory dimana menyimpan backups



12. menjalankan file ansible playbook backup cisco router playbook



13. memastikan backup file sudah dibuat

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-csr1000v
File  Edit  View  Search  Terminal  Help
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v/backups$ cat show_run_CSR1kv.txt
Building configuration...

Current configuration : 3921 bytes
!
! Last configuration change at 08:27:04 UTC Thu Jul 14 2022
!
version 16.9
service timestamps debug datetime msec
service timestamps log datetime msec
platform qfp utilization monitor load 80
platform punt-keepalive disable-kernel-core
platform console virtual
!
hostname CSR1kv
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
!
!
!
!
!
!
!
ip domain name example.netacad.com
!
!
!
login on-success log
!
!
!
!
Menu  cisco_router_ipv6_con...  devasc@labvm: ~/labs...  backups
```

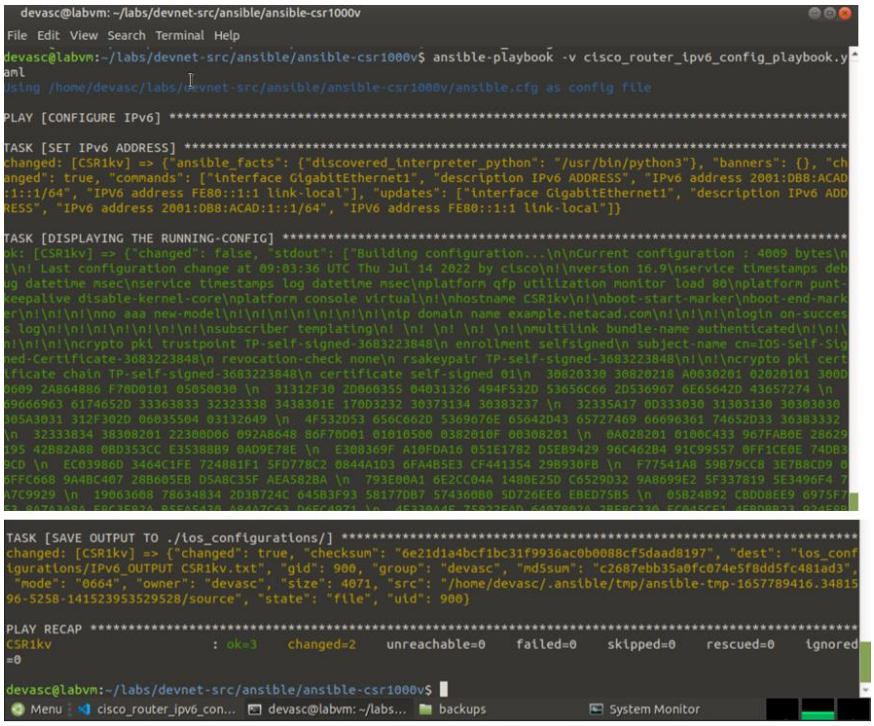
14. membuat ansible sebagai konfigurasi device, buka file hosts

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ cat hosts
# Enter the hosts or devices for Ansible playbooks
CSR1kv ansible_user=cisco ansible_password=cisco123! ansible_host=192.168.1.14devasc@labvm:~/labs/devnet-src/ans
ible/ansible-csr1000v$
Menu  backup_cisco_router_...  devasc@labvm: ~/labs...  backups
```

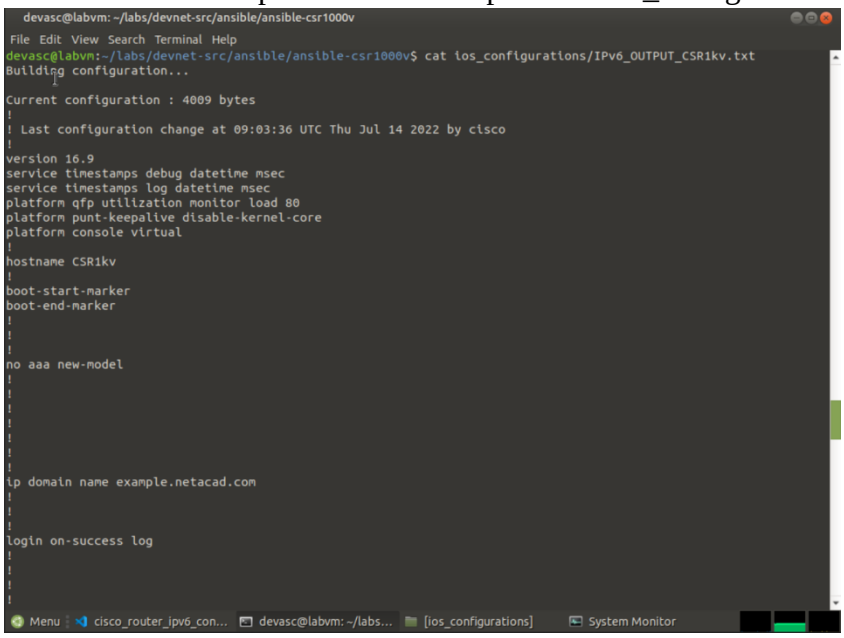
15. membuat playbook baru, membuat file baru di ansible-csr1000v dengan nama cisco_router_ipv6_config_playbook.yaml

```
! backup_cisco_router_playbook.yaml   ! cisco_router_ipv6_config_playbook.yaml ×
ansible-csr1000v > ! cisco_router_ipv6_config_playbook.yaml
1   ---
2   - name: CONFIGURE IPv6
3     hosts: CSR1kv
4     gather_facts: false
5     connection: local
6     tasks:
7       - name: SET IPv6 ADDRESS
8         ios_config:
9           parents: "interface GigabitEthernet1"
10          lines:
11            - description IPv6 ADDRESS
12            - IPv6 address 2001:DB8:ACAD:1::1/64
13            - IPV6 address FE80::1:1 link-local
14
15      - name: DISPLAYING THE RUNNING-CONFIG
16        ios_command:
17          commands:
18            - show running-config
19        register: config
20
21      - name: SAVE OUTPUT TO ./ios_configurations/
22        copy:
23          content: "{{ config.stdout[0] }}"
24          dest: "ios_configurations/IPv6_OUTPUT {{ inventory_hostname }}
```

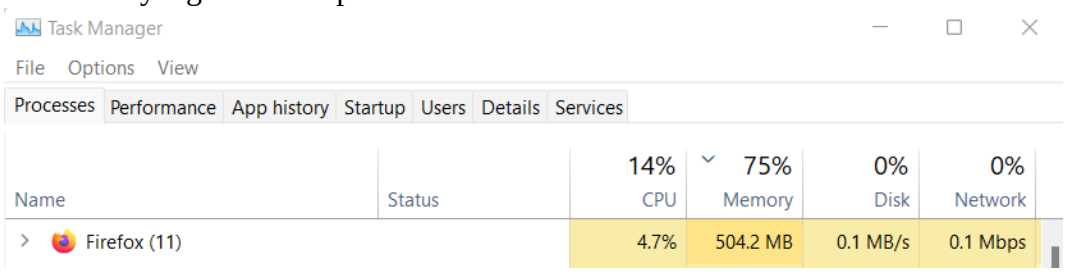
16. jalankan ansible playbook untuk konfigurasi IPv6



17. memastikan file output sudah terbuat pada file ios_configurations

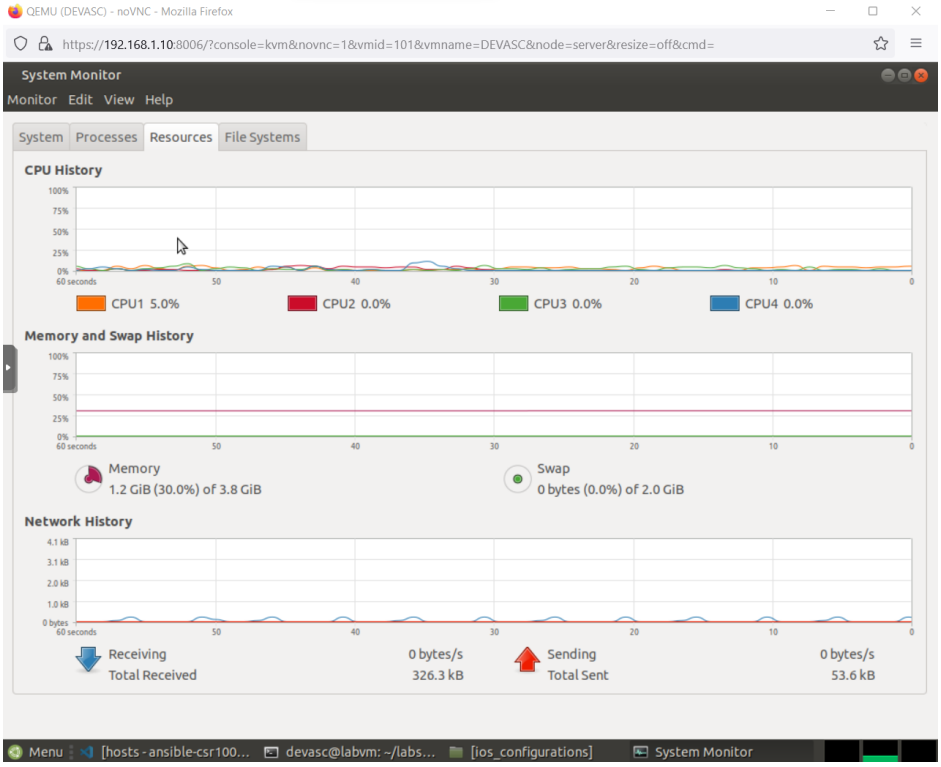


18. menampilkan perofrman CPU dan RAM pada task manager Ketika menjalankan DEVASC yang berada di proxmox



Gambar 0.0 task manger

19. menampilkan peforman CPU dan ram pada system monitor devasc Ketika menjalankan devasc yang berada ditempat proxmox



Lampiran Hasil Pengujian Modul 7.4.8 Di Proxmox

1. jalankan DEVASC VM
2. buka terminal pada DEVASC virtual machine
3. aktfikan server SSH

```
devasc@labvm: ~
File  Edit  View  Search  Terminal  Help
devasc@labvm:~$ sudo systemctl start ssh
```

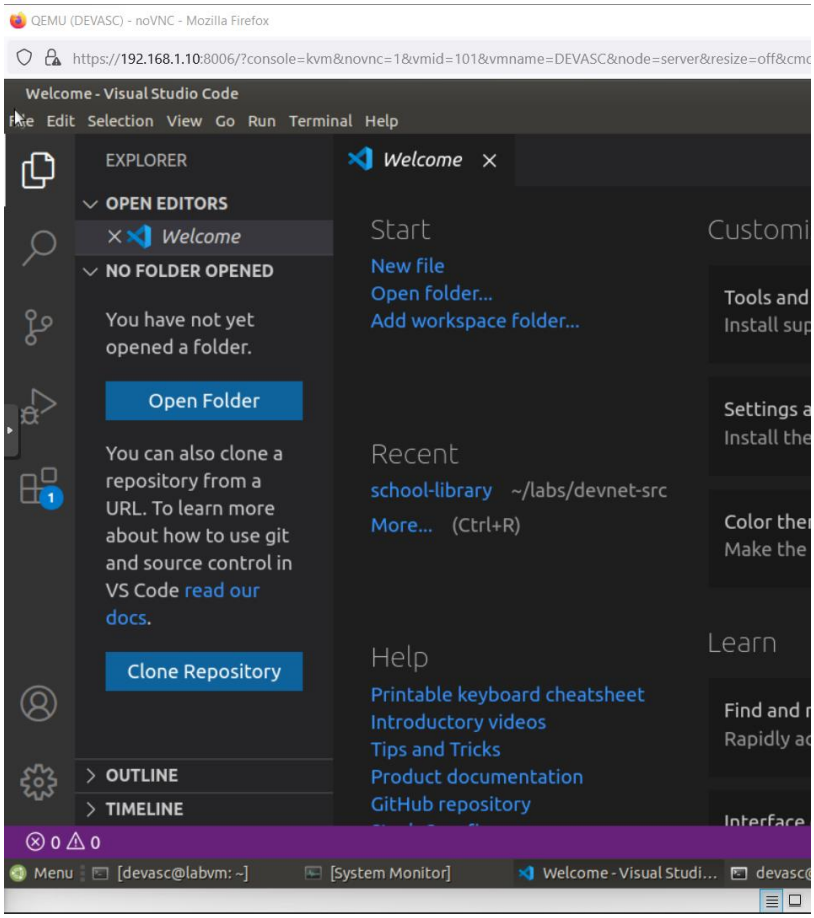
4. *install* SSH

```
devasc@labvm:~$ sudo apt-get install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  openssh-client openssh-sftp-server
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following packages will be upgraded:
  openssh-client openssh-server openssh-sftp-server
3 upgraded, 0 newly installed, 0 to remove and 534 not upgraded.
Need to get 1,099 kB of archives.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-sftp-ser
ver amd64 1:8.2p1-4ubuntu0.5 [51.5 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server a
md64 1:8.2p1-4ubuntu0.5 [377 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-client a
md64 1:8.2p1-4ubuntu0.5 [671 kB]
Fetched 1,099 kB in 2s (494 kB/s)
Preconfiguring packages ...
(Reading database ... 211981 files and directories currently installed.)
```

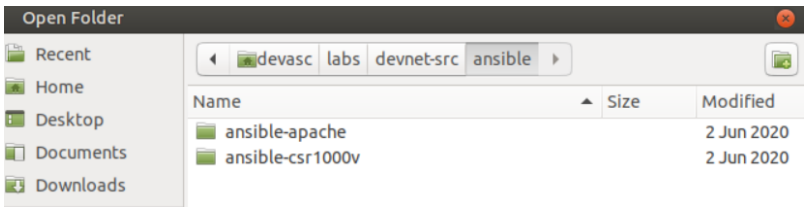
5. *install* sshpass

```
devasc@labvm:~$ sudo apt-get install sshpass
Reading package lists... Done
Building dependency tree
Reading state information... Done
sshpass is already the newest version (1.06-1).
0 upgraded, 0 newly installed, 0 to remove and 534 not upgraded.
devasc@labvm:~$
```

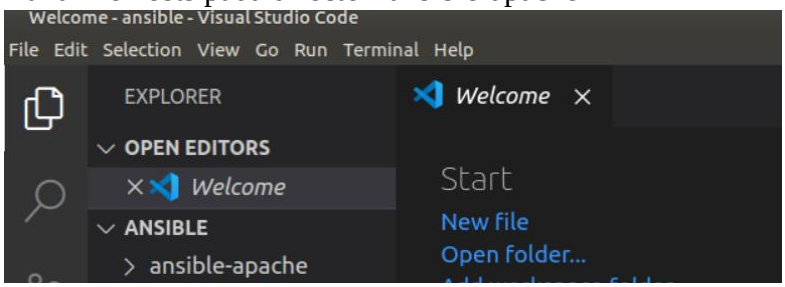
6. buka *Visual Studio Code*



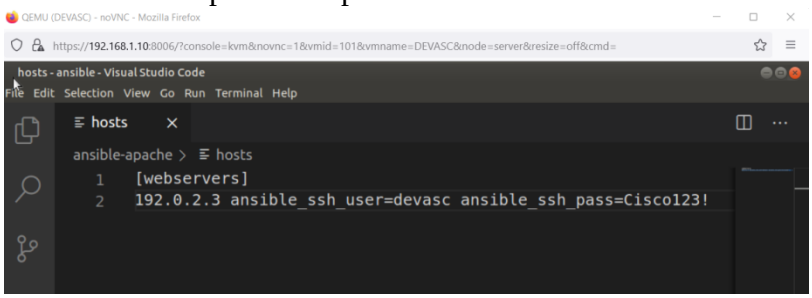
7. buka folder /labs/devnet-src/ansible



8. Buka file hosts pada directori ansible-apache



9. Tambahkan script berikut pada file hosts



10. Cek ip denga ip addr

```
devasc@labvm:~$ ip addr
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: ens18: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 62:6d:95:c3:63:1f brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.19/24 brd 192.168.1.255 scope global dynamic ens18
       valid_lft 83807sec preferred_lft 83807sec
    inet6 fe80::606d:95ff:fec3:631f/64 scope link
       valid_lft forever preferred_lft forever
3: dummy0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN group default qlen 1000
    link/ether ea:64:57:c6:10:4e brd ff:ff:ff:ff:ff:ff
    inet 192.0.2.1/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.2/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.3/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.4/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.5/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet6 fe80::e864:57ff:fec6:104e/64 scope link
       valid_lft forever preferred_lft forever
devasc@labvm:~$
```

11. membuat ansible playbook untuk mengotomatiskan installasi web server

```
# Add to this file for the Ansible lab
[defaults]
# Use local hosts file in this folder
inventory=./hosts
# Don't worry about RSA Fingerprints
host_key_checking = False
# Do not create retry files
retry_files_enabled = False
```

12. lakukan ping modul untuk memeriksa bahwa ansible dapat ping webserver

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible webservers -m ping
192.0.2.3 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
```

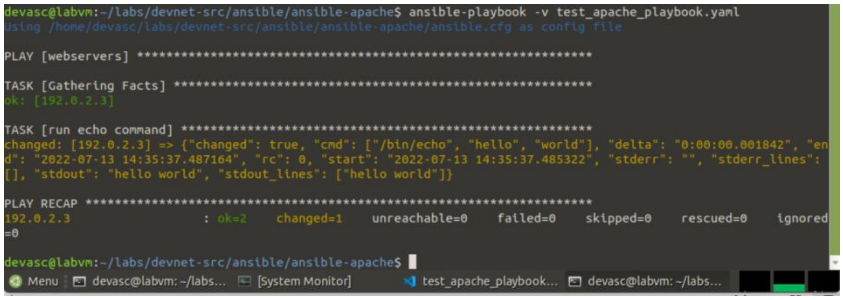
13. menverifikasi bahwa ansible dapat berkomunikasi dengan webserver

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible webservers -m  command -a "/bin/echo hello world"
192.0.2.3 | CHANGED | rc=0 >>
hello world
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
```

14. membuat file di ansible-apache melalui VS code, dengan nama test_apache_playbook.yaml lalu masukkan script seperti dibawah

```
---
- hosts: webservers
  tasks:
    - name: run echo command
      command: /bin/echo hello world
```

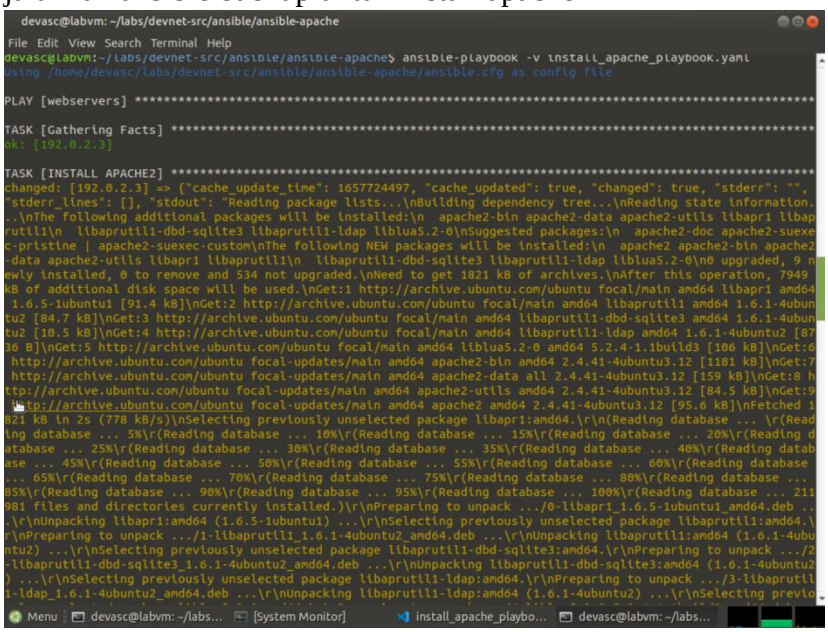
15. jalankan ansible playbook untuk tes grup webserver



16. membuat file di ansible-apache melalui VS code, dengan nama install_apache_playbook.yaml lalu masukkan script seperti dibawah

```
---
-hosts: webservers
 become: yes
 tasks:
   -name: INSTALL APACHE2
    apt: name=apache2 update_cache=yes state=latest
   -name: ENABLED MOD_REWRITE
    apache2_module: name=rewrite state=present
    notify:
      - RESTART APACHE2

handlers:
-name: RESTART APACHE2
service: name=apache2 state=restarted
```

17. jalankan ansible backup untuk install apache



18. verifikasi bahwa apache sudah terinstall

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2022-07-13 15:02:05 UTC; 4min 11s ago
     Docs: https://httpd.apache.org/docs/2.4/
  Process: 7288 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 7292 (apache2)
    Tasks: 55 (limit: 4627)
   Memory: 5.8M
   CGroup: /system.slice/apache2.service
           ├─7292 /usr/sbin/apache2 -k start
           ├─7293 /usr/sbin/apache2 -k start
           └─7294 /usr/sbin/apache2 -k start

Jul 13 15:02:05 labvm systemd[1]: Starting The Apache HTTP Server...
Jul 13 15:02:05 labvm systemd[1]: Started The Apache HTTP Server.
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
```

19. membuat file di ansible-apache melalui VS code, dengan nama install_apache_options_playbook.yaml lalu masukkan script seperti dibawah

```
install_apache_options_playbook.yaml - ansible - Visual Studio Code
ansible-apache > install_apache_options_playbook.yaml
---
- hosts: webservers
  become: yes
  tasks:
    - name: INSTALL APACHE2
      apt: name=apache2 update_cache=yes state=latest

    - name: ENABLED MOD_REWRITE
      apache2_module: name=rewrite state=present
      notify:
        - RESTART APACHE2

    - name: APACHE2 LISTEN ON PORT 8081
      lineinfile: dest=/etc/apache2/ports.conf regexp="^Listen
      notify:
        - RESTART APACHE2

    - name: APACHE2 VIRTUALHOST ON PORT 8081
      lineinfile: dest=/etc/apache2/sites-available/000-default
      notify:
        - RESTART APACHE2
```

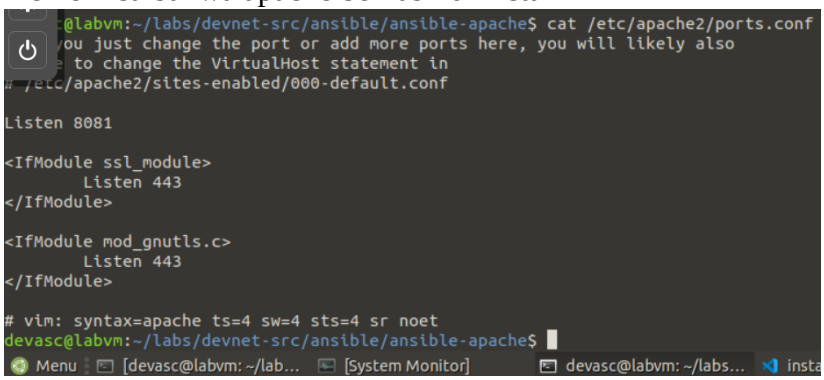
20. periksa file yang akan dimodifikasi ke playbook

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ cat /etc/apache2/ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 80

<IfModule ssl_module>
        Listen 443
</IfModule>

<IfModule mod_gnutls.c>
        Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
```

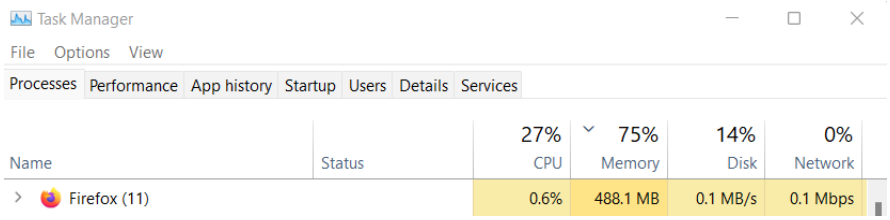
21. jalankan ansible playbook

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible-playbook install_apache_options_playbook.yaml

PLAY [webservers] *******************************************************************************

TASK [Gathering Facts] ******************************************************************************
ok: [192.0.2.3]

TASK [INSTALL APACHE2] ******************************************************************************
ok: [192.0.2.3]

TASK [ENABLED MOD_REWRITE] ******************************************************************************
ok: [192.0.2.3]

TASK [APACHE2 LISTEN ON PORT 8081] ******************************************************************
ok: [192.0.2.3]

TASK [APACHE2 VIRTUALHOST ON PORT 8081] *************************************************************
changed: [192.0.2.3]

RUNNING HANDLER [RESTART APACHE2] *******************************************************************
changed: [192.0.2.3]

PLAY RECAP ******************************************************************************************
192.0.2.3                  : ok=6    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored
=0

devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
```

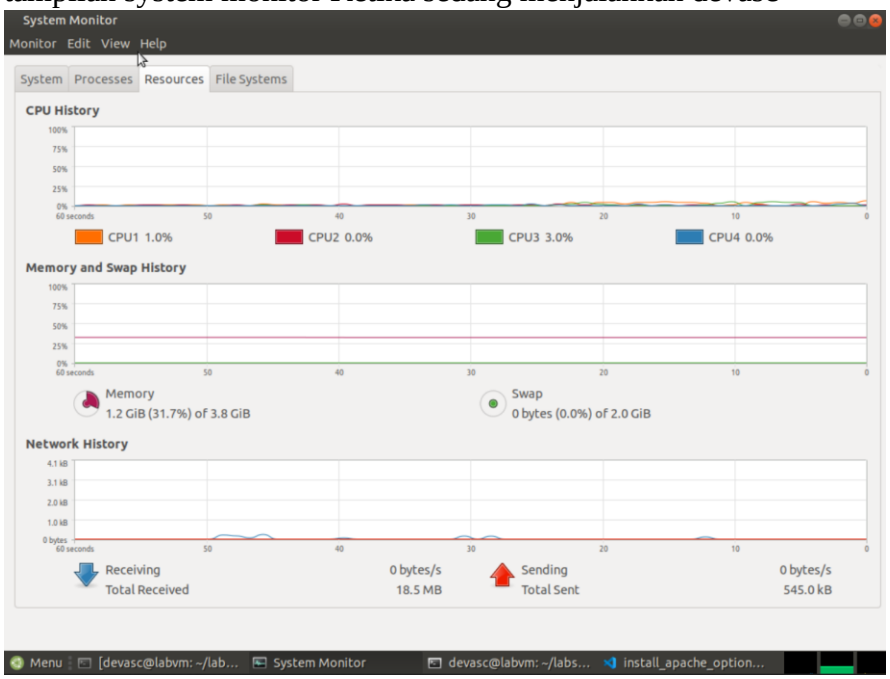
22. memeriksa bahwa apache berhasil di install



23. tampilan task manager Ketika sedang menjalankan devasc tempat proxmox pada browser firefox



24. tampilan system monitor Ketika sedang menjalankan devasc



Lampiran Hasil Pengujian Modul 7.4.7 Di PNET-Lab

1. Buka file hosts.

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ vim hosts.txt
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

2. Isikan file hosts dengan username dan password beserta IP Address pada CSR1kv.

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-csr1000v
File  Edit  View  Search  Terminal  Help
# Enter hosts or devices for Ansible playbooks
CSR1kv ansible_user=cisco ansible_password=cisco123! ansible_host=192.168.20.253
~
~
~
~
```

3. Kembali ke directory ansible

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ cd ..
devasc@labvm:~/labs/devnet-src/ansible$
Menu   devasc@labvm: ~/labs...
```

4. Memeriksa daftar command pada ansible

```
devasc@labvm:~/labs/devnet-src/ansible$ ansible
usage: ansible [-h] [--version] [-v] [-b] [--become-method BECOME_METHOD] [--become-user BECOME_USER] [-K]
               [-i INVENTORY] [--list-hosts] [-l SUBSET] [-P POLL_INTERVAL] [-B SECONDS] [-o] [-t TREE] [-k]
               [--private-key PRIVATE_KEY_FILE] [-u REMOTE_USER] [-c CONNECTION] [-T TIMEOUT]
               [--ssh-common-args SSH_COMMON_ARGS] [--sftp-extra-args SFTP_EXTRA_ARGS]
               [--scp-extra-args SCP_EXTRA_ARGS] [--ssh-extra-args SSH_EXTRA_ARGS] [-C] [--syntax-check] [-D]
               [-e EXTRA_VARS] [--vault-id VAULT_IDS]
               [--ask-vault-pass | --vault-password-file VAULT_PASSWORD_FILES] [-f FORKS] [-M MODULE_PATH]
               [--playbook-dir BASEDIR] [-a MODULE_ARGS] [-m MODULE_NAME]
               pattern
ansible: error: the following arguments are required: pattern
```

5. Memeriksa versi ansible dengan command --version

```
devasc@labvm:~/labs/devnet-src/ansible$ ansible --version
ansible 2.9.9
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/home/devasc/.ansible/plugins/modules', '/usr/share/ansible/plugi
]
  ansible python module location = /home/devasc/.local/lib/python3.8/site-packages/ansible
  executable location = /home/devasc/.local/bin/ansible
  python version = 3.8.2 (default, Apr 27 2020, 15:53:34) [GCC 9.3.0]
devasc@labvm:~/labs/devnet-src/ansible$
Menu   devasc@labvm: ~/labs...
```

6. Menampilkan file bawaan dari ansible.cfg

```
devasc@labvm: ~/labs/devnet-src/ansible
File  Edit  View  Search  Terminal  Help
devasc@labvm:~/labs/devnet-src/ansible$ cat /etc/ansible/ansible.cfg | more
# config file for ansible -- https://ansible.com/
# ===============================================

# nearly all parameters can be overridden in ansible-playbook
# or with command line flags. ansible will read ANSIBLE_CONFIG,
# ansible.cfg in the current working directory, .ansible.cfg in
# the home directory or /etc/ansible/ansible.cfg, whichever it
# finds first

[defaults]

# some basic default values...

#inventory      = /etc/ansible/hosts
#library        = /usr/share/my_modules/
#module_utils   = /usr/share/my_module_utils/
#remote_tmp     = ~/.ansible/tmp
#local_tmp      = ~/.ansible/tmp
#plugin_filters_cfg = /etc/ansible/plugin_filters.yml
#forks          = 5
#poll_interval  = 15
#sudo_user      = root
#ask_sudo_pass = True
#ask_pass      = True
#transport      = smart
#remote_port    = 22
#module_lang    = C
#module_set_locale = False

# plays will gather facts by default, which contain information about
# the remote system.
#
# smart - gather by default, but don't regather if already gathered
# implicit - gather by default, turn off with gather_facts: False
# explicit - do not gather by default, must say gather_facts: True
#gathering = implicit
Menu   devasc@labvm: ~/labs...
```

7. Memeriksa versi ansible pada directory ansible-csr1000v

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ ansible --version
ansible 2.9.9
  config file = /home/devasc/labs/devnet-src/ansible/ansible-csr1000v/ansible.cfg
  configured module search path = ['/home/devasc/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules'
]
  ansible python module location = /home/devasc/.local/lib/python3.8/site-packages/ansible
  executable location = /home/devasc/.local/bin/ansible
  python version = 3.8.2 (default, Apr 27 2020, 15:53:34) [GCC 9.3.0]
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

8. Membuka file ansible.cfg

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ cat ansible.cfg
# Add to this file for the Ansible lab
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

9. Menambahkan script pada ansible.cfg menggunakan command vim

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ vim ansible.cfg
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

10. Isi Script pada ansible.cfg, berisikan

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-csr1000v
File  Edit  View  Search  Terminal  Help
# Add to this file for the Ansible lab
[defaults]
# Use local hosts file in this folder
inventory=./hosts
host_key_checking = False # Don't worry about RSA Fingerprints
retry_files_enabled = False # Do not create them
deprecation_warnings = False # Do not show warnings
~
~
~
```

- *./hosts* adalah file host di directory saat ini,
- *host_key_checking= False*, lingkungan pengembangan local tidak memiliki kunci ssh yang disiapkan, diatur pada False
- *retry_files_anabled= False*, saat ansible memiliki masalah dalam menjalankan playbook untuk sebuah host, akan menampilkan nama host ke dalam sebuah file di direktori
- *deprecation_warnings=False*, menonaktifkan peringatan penggunaan fitur yang dijadwalkan untuk dihapus dalam rilis ansible yang akan dating

11. membuat script "backup_cisco_router_playbook.yaml" lalu buka menggunakan vim.

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ vim  backup_cisco_router_playbook.yaml
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

12. Isi script "backup_cisco_router_playbook.yaml,

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-csr1000v
File  Edit  View  Search  Terminal  Help
---
- name: AUTOMATIC BACKUP OF RUNNING-CONFIG
  hosts: CSR1kv
  gather_facts: false
  connection: local

  tasks:
   - name: DISPPLAYING THE RUNNING-CONFIG
     ios_command:
       commands:
         - show running-config
     register: config

   - name: SAVE OUTPUT TO ./bacups/
     copy:
       content: "{{ config.stdout[0] }}"
       dest: "backups/show_run {{ inventory_hostname }}.txt
~
~
```

13. Ping pada area CSR1kv

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ ping 192.168.20.253
PING 192.168.20.253 (192.168.20.253) 56(84) bytes of data.
64 bytes from 192.168.20.253: icmp_seq=1 ttl=255 time=8.19 ms
64 bytes from 192.168.20.253: icmp_seq=2 ttl=255 time=2.55 ms
64 bytes from 192.168.20.253: icmp_seq=3 ttl=255 time=7.73 ms
64 bytes from 192.168.20.253: icmp_seq=4 ttl=255 time=2.56 ms
64 bytes from 192.168.20.253: icmp_seq=5 ttl=255 time=8.85 ms
64 bytes from 192.168.20.253: icmp_seq=6 ttl=255 time=3.51 ms
^C
--- 192.168.20.253 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5008ms
rtt min/avg/max/mdev = 2.549/5.565/8.854/2.731 ms
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

14. Membuat directory backups

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ mkdir backups
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$
Menu   devasc@labvm: ~/labs...
```

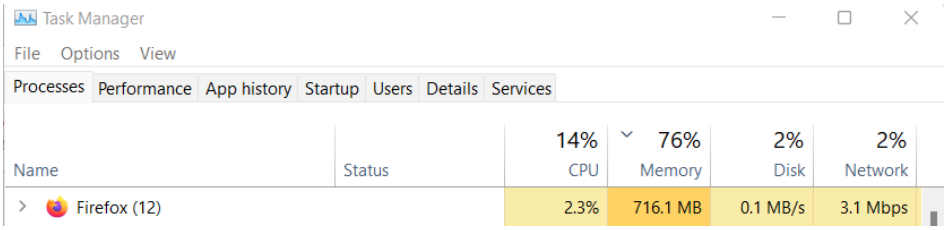
15. Jalankan ansible-playbook “backup_cisco_router_playbook.yaml”, pada saat dirunning error

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-csr1000v$ ansible-playbook backup_cisco_router_playbook.yaml

PLAY [AUTOMATIC BACKUP OF RUNNING-CONFIG] ***************************************************************

TASK [DISPLAYING THE RUNNING-CONFIG] ********************************************************************
ok: [CSR1kv]

TASK [SAVE OUTPUT TO ./backups/] ************************************************************************
changed: [CSR1kv]

PLAY RECAP **********************************************************************************************
CSR1kv                     : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored
=0
```

16. Memeriksa pada directory backups, jika berhasil dirunning maka file show_run_CSR1kv.txt akan muncul, lalu buka dengan “cat show_run_CSR1kv.txt”

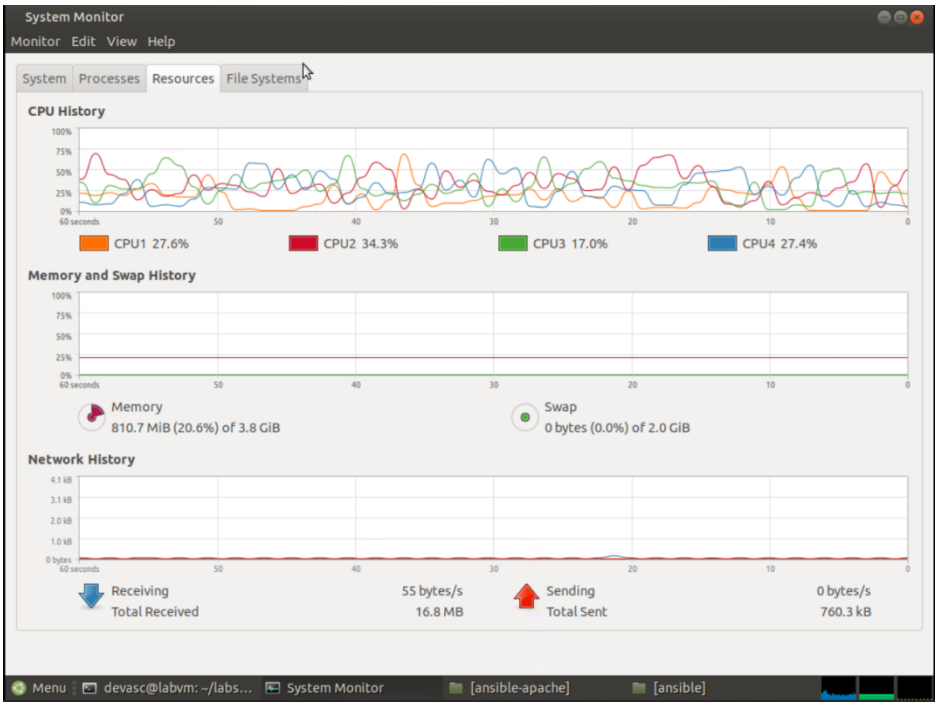
```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-csr1000v/backups
File  Edit  View  Search  Terminal  Help
banner motd ^C
*                                          *
**                                        **
***                                      ***
***  Cisco Networking Academy            ***
***                                      ***
***  This software is provided for       ***
***   Educational Purposes               ***
***    Only in Networking Academies      ***
***                                      ***
**                                        **
*                                          *
^C

line con 0
 logging synchronous
 stopbits 1
line vty 0 4
 login local
 transport input ssh
line vty 5 15
 login local
 transport input ssh
```

17. Dari hasil diatas didapatkan hasil pemeriksaan pada task manager, dilihat pada Firefox kinerja CPU 2.3% lalu pada Memory dengan kinerja sebesar 716.1 MB



18. Pemeriksaan pada system monitor devasc yang berada di pnetlab mendapatkan kinerja pakai pada
    - CPU 1 = 27.6%
    - CPU 2 = 34.3%
    - CPU 3 = 17.0%
    - CPU 4 = 27.4%

    Pada penggunaan Memory sebesar 810.7 MB dari 3.8 GB mendapatkan presentase 20.6%



Lampiran Hasil Pengujian Modul 7.4.8 Di PNET-Lab

1. Memulai SSH server

```
devasc@labvm: ~
File  Edit  View  Search  Terminal  Help
devasc@labvm:~$ sudosystemctl
sudosystemctl: command not found
devasc@labvm:~$ sudo systemctl start ssh
devasc@labvm:~$
```

2. *Install* SSH

```
devasc@labvm:~$ sudo apt-get install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  openssh-client openssh-sftp-server
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following packages will be upgraded:
  openssh-client openssh-server openssh-sftp-server
3 upgraded, 0 newly installed, 0 to remove and 534 not upgraded.
Need to get 1,099 kB of archives.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-sftp-server amd64 1:8.2p1-4ubuntu0.5 [51
,5 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.5 [377 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-client amd64 1:8.2p1-4ubuntu0.5 [671 kB]
Fetched 1,099 kB in 15s (75.4 kB/s)
Preconfiguring packages ...
(Reading database ... 211981 files and directories currently installed.)
Preparing to unpack .../openssh-sftp-server_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
Unpacking openssh-sftp-server (1:8.2p1-4ubuntu0.5) over (1:8.2p1-4) ...
Preparing to unpack .../openssh-server_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
Unpacking openssh-server (1:8.2p1-4ubuntu0.5) over (1:8.2p1-4) ...
Preparing to unpack .../openssh-client_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
Unpacking openssh-client (1:8.2p1-4ubuntu0.5) over (1:8.2p1-4) ...
Setting up openssh-client (1:8.2p1-4ubuntu0.5) ...
Setting up openssh-sftp-server (1:8.2p1-4ubuntu0.5) ...
Setting up openssh-server (1:8.2p1-4ubuntu0.5) ...
rescue-ssh.target is a disabled or a static unit, not starting it.
Processing triggers for systemd (245.4-4ubuntu3.1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ufw (0.36-6) ...
devasc@labvm:~$
Menu  devasc@labvm: ~
```

3. *Install* sshpass

```
devasc@labvm:~$ sudo apt-get install sshpass
Reading package lists... Done
Building dependency tree
Reading state information... Done
sshpass is already the newest version (1.06-1).
0 upgraded, 0 newly installed, 0 to remove and 534 not upgraded.
devasc@labvm:~$
Menu  devasc@labvm: ~
```

4. Buka *file hosts* pada ansible-apache dengan vim

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ vim hosts.txt
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  [ansible-apache]
```

5. Isi kan *script* pada *hosts* seperti berikut

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-apache
File  Edit  View  Search  Terminal  Help
[webservers]
192.0.2.3 ansible_ssh_user=devasc ansible_ssh_pass=Cisco123!
~
~
```

6. Cek ip addr

```
devasc@labvm:~/labs/devnet-src/ansible$ ip addr
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: ens3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 50:fd:a4:00:03:00 brd ff:ff:ff:ff:ff:ff
    inet 192.168.20.254/24 brd 192.168.20.255 scope global dynamic ens3
       valid_lft 421sec preferred_lft 421sec
    inet6 fe80::52fd:a4ff:fe00:300/64 scope link
       valid_lft forever preferred_lft forever
3: dummy0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN group default qlen 1000
    link/ether fe:4b:8e:2b:d9:89 brd ff:ff:ff:ff:ff:ff
    inet 192.0.2.1/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.2/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.3/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.4/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet 192.0.2.5/32 scope global dummy0
       valid_lft forever preferred_lft forever
    inet6 fe80::fc4b:8eff:fe2b:d989/64 scope link
       valid_lft forever preferred_lft forever
devasc@labvm:~/labs/devnet-src/ansible$
Menu  devasc@labvm: ~/labs...  [ansible-apache]
```

7. Membuka *file* ansible.cfg

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ vim ansible.cfg
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  [ansible-apache]
```

8. Isi kan script pada ansible.cfg seperti berikut

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-apache
File  Edit  View  Search  Terminal  Help
# Add to this file for the Ansible lab
[defaults]
# Use local hosts file in this folder
inventory=./hosts
# Don't worry about RSA Fingerprints
host_key_checking = False
# Do not create retry files
retry_files_enabled = False
~
~
```

9. Memeriksa komunikasi dengan local *webserver*, gunakan ping ansible dengan *hosts webservers*

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible webservers -m ping
192.0.2.3 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  ansible-apache
```

10. Memastikan bahwa ansible dapat terhubung dengan webserver

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible webservers -m command -a "/bin/echo hello world"
192.0.2.3 | CHANGED | rc=0 >>
hello world
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  ansible-apache
```

11. Membuat file “test_apache_playbook.yaml” lalu buka dengan menggunakan vim

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ vim test_apache_playbook.yaml
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  ansible-apache
```

12. Berikut isi *script* seperti berikut “test_apache_playbook.yaml”

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-apache
File  Edit  View  Search  Terminal  Help
---
- hosts: webservers
  tasks:
    - name: run echo command
      command: /bin/echo hello world
```

13. Jalankan ansible-playbook "*test_apache_playbook*.yaml"

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible-playbook -v test_apache_playbook.yaml
Using /home/devasc/labs/devnet-src/ansible/ansible-apache/ansible.cfg as config file

PLAY [webservers] *******************************************************************************

TASK [Gathering Facts] ******************************************************************************
ok: [192.0.2.3]

TASK [run echo command] *****************************************************************************
changed: [192.0.2.3] => {"changed": true, "cmd": ["/bin/echo", "hello", "world"], "delta": "0:00:00.058653", "en
d": "2022-07-15 08:57:29.567558", "rc": 0, "start": "2022-07-15 08:57:29.508905", "stderr": "", "stderr_lines":
[], "stdout": "hello world", "stdout_lines": ["hello world"]}

PLAY RECAP ******************************************************************************************
192.0.2.3                  : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored
=0

devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  ansible-apache
```

14. Membuat file "*install_apache_playbook*.yaml" dan buka dengan vim

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ vim  install_apache_playbook.yaml
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  ansible-apache
```

15. Jalankan ansible-playbook "*install_apache_playbook*.yaml"

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible-playbook -v install_apache_playbook.yaml
Using /home/devasc/labs/devnet-src/ansible/ansible-apache/ansible.cfg as config file

PLAY [webservers] *******************************************************************************

TASK [Gathering Facts] ******************************************************************************
ok: [192.0.2.3]

TASK [INSTALL APACHE2] ******************************************************************************
changed: [192.0.2.3] => {"cache_update_time": 1657876654, "cache_updated": true, "changed": true, "stderr": "",
"stderr_lines": [], "stdout": "Reading package lists...\nBuilding dependency tree...\nReading state information.
..\nThe following additional packages will be installed:\n  apache2-bin apache2-data apache2-utils libapr1 libap
rutil1\n  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0\nSuggested packages:\n  apache2-doc apache2-suexe
c-pristine | apache2-suexec-custom\nThe following NEW packages will be installed:\n  apache2 apache2-bin apache2
-data apache2-utils libapr1 libaprutil1\n  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0\n0 upgraded, 9 n
ewly installed, 0 to remove and 535 not upgraded.\nNeed to get 1821 kB of archives.\nAfter this operation, 7949
kB of additional disk space will be used.\nGet:1 http://archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64
 1.6.5-1ubuntu1 [91.4 kB]\nGet:2 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1 amd64 1.6.1-4ubun
tu2 [84.7 kB]\nGet:3 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubun
tu2 [10.5 kB]\nGet:4 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1-ldap amd64 1.6.1-4ubuntu2 [87
36 B]\nGet:5 http://archive.ubuntu.com/ubuntu focal/main amd64 liblua5.2-0 amd64 5.2.4-1.1build3 [106 kB]\nGet:6
 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-bin amd64 2.4.41-4ubuntu3.12 [1181 kB]\nGet:7
 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-data all 2.4.41-4ubuntu3.12 [159 kB]\nGet:8 h
ttp://archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-utils amd64 2.4.41-4ubuntu3.12 [84.5 kB]\nGet:9
 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2 amd64 2.4.41-4ubuntu3.12 [95.6 kB]\nFetched 1
821 kB in 15s (118 kB/s)\nSelecting previously unselected package libapr1:amd64.\r\n(Reading database ... \r(Rea
ding database ... 5%\r(Reading database ... 10%\r(Reading database ... 15%\r(Reading database ... 20%\r(Reading
database ... 25%\r(Reading database ... 30%\r(Reading database ... 35%\r(Reading database ... 40%\r(Reading data
base ... 45%\r(Reading database ... 50%\r(Reading database ... 55%\r(Reading database ... 60%\r(Reading database
 ... 65%\r(Reading database ... 70%\r(Reading database ... 75%\r(Reading database ... 80%\r(Reading database ...
 85%\r(Reading database ... 90%\r(Reading database ... 95%\r(Reading database ... 100%\r(Reading database ... 21
Menu  devasc@labvm: ~/labs...  ansible-apache  System Monitor
```

```
PLAY RECAP ******************************************************************************************
192.0.2.3                  : ok=4    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored
=0

devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  [ansible-apache]  [System Monitor]
```

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-apache
File  Edit  View  Search  Terminal  Help
---
- hosts: webservers
  become: yes
  tasks:
    - name: INSTALL APACHE2
      apt: name=apache2 update_cache=yes state=latest

    - name: ENABBLED MOD_REWRITE
      apache2_module: name=rewrite state=present
      notify:
        - RESTART APACHE2

  handlers:
    - name: RESTART APACHE2
      service: name=apache2 state=restarted
~
```

16. Lakukan cek *status* apache2 jika berhasil maka menunjukan status "*Active*"

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2022-07-15 09:23:15 UTC; 25min ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 6391 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 6403 (apache2)
      Tasks: 55 (limit: 4615)
     Memory: 5.7M
     CGroup: /system.slice/apache2.service
             ├─6403 /usr/sbin/apache2 -k start
             ├─6408 /usr/sbin/apache2 -k start
             └─6409 /usr/sbin/apache2 -k start

Jul 15 09:23:15 labvm systemd[1]: Starting The Apache HTTP Server...
Jul 15 09:23:15 labvm systemd[1]: Started The Apache HTTP Server.
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  [ansible-apache]  [System Monitor]
```

17. Membuat *file* "*install_apache_options_playbook*.yaml" dan buka dengan vim

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ vim install_apache_options_playbook.yaml
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu  devasc@labvm: ~/labs...  [ansible-apache]  [System Monitor]
```

18. Isi kan *script* "install_apache_options_playbook.yaml" seperti berikut

```
devasc@labvm: ~/labs/devnet-src/ansible/ansible-apache
File  Edit  View  Search  Terminal  Help
---
- hosts: webservers
  become: yes
  tasks:
   - name: INSTALL APACHE2
     apt: name=apache2 update_cache=yes state=latest

   - name: ENABLED MOD_REWRITE
     apache2_module: name=rewrite state=present
     notify:
       - RESTART APACHE2

   - name: APACHE2 LISTEN ON PORT 8081
     lineinfile: dest=/etc/apache2/ports.conf reqexp="^Listen 80" line="Listen 8081" state=present
     notify:
       - RESTART APACHE2

   - name: APACHE2 VIRTUALHOST ON PORT 8081
     lineinfile: dest=/etc/apache2/sites=avaible/000-default.conf regexp="^<VirtualHost \*:80>" line="<VirtualHo
st *:8081>" state=present
     notify:
       - RESTART APACHE2
  handlers:
   - name: RESTART APACHE2
     service: name=apache2 state=restarted
```

19. Sebelum dijalankan, terlebih dahulu memeriksa pada playbook yang akan di mofikasi yaitu pada ports.conf, perhatikan pada "Listen 80"

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ cat /etc/apache2/ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 80

<IfModule ssl_module>
        Listen 443
</IfModule>

<IfModule mod_gnutls.c>
        Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

20. Periksa juga pada bagian 000-default.conf, perhatikan pada bagian <*VirtualHost* *:80>

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ cat /etc/apache2/sites-available/000-default.conf
<VirtualHost *:80>
        # The ServerName directive sets the request scheme, hostname and port that
        # the server uses to identify itself. This is used when creating
        # redirection URLs. In the context of virtual hosts, the ServerName
        # specifies what hostname must appear in the request's Host: header to
        # match this virtual host. For the default virtual host (this file) this
        # value is not decisive as it is used as a last resort host regardless.
        # However, you must set it for any further virtual host explicitly.
        #ServerName www.example.com

        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html

        # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
        # error, crit, alert, emerg.
        # It is also possible to configure the loglevel for particular
        # modules, e.g.
        #LogLevel info ssl:warn

        ErrorLog ${APACHE_LOG_DIR}/error.log
        CustomLog ${APACHE_LOG_DIR}/access.log combined

        # For most configuration files from conf-available/, which are
        # enabled or disabled at a global level, it is possible to
        # include a line for only one particular virtual host. For example the
        # following line enables the CGI configuration for this host only
        # after it has been globally disabled with "a2disconf".
        #Include conf-available/serve-cgi-bin.conf
</VirtualHost>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu   devasc@labvm: ~/labs...   [ansible-apache]   [System Monitor]
```

21. Jalankan ansible-playbook "*install_apache_options_playbook*.yaml"

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ ansible-playbook install_apache_options_playbook.yaml

PLAY [webservers] ***********************************************************************************************

TASK [Gathering Facts] ******************************************************************************************
ok: [192.0.2.3]

TASK [INSTALL APACHE2] ******************************************************************************************
ok: [192.0.2.3]

TASK [ENABLED MOD_REWRITE] **************************************************************************************
ok: [192.0.2.3]

TASK [APACHE2 LISTEN ON PORT 8081] ******************************************************************************
changed: [192.0.2.3]

TASK [APACHE2 VIRTUALHOST ON PORT 8081] *************************************************************************
changed: [192.0.2.3]

RUNNING HANDLER [RESTART APACHE2] *******************************************************************************
changed: [192.0.2.3]

PLAY RECAP ******************************************************************************************************
192.0.2.3                  : ok=6    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored
=0

devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$
Menu   devasc@labvm: ~/labs...   [ansible-apache]   [System Monitor]
```

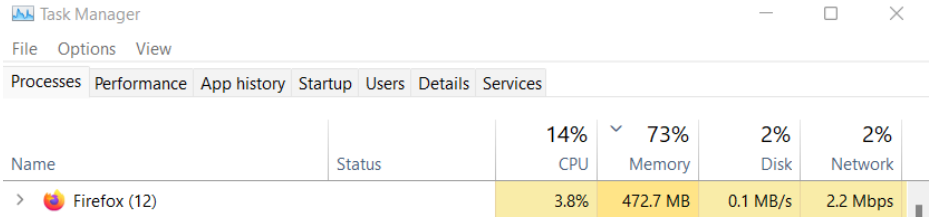
22. Cek Kembali pada ports.conf, maka akan berubah menjadi "*Listen* 81"

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ cat /etc/apache2/ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 8081

<IfModule ssl_module>
        Listen 443
</IfModule>

<IfModule mod_gnutls.c>
        Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

23. Cek Kembali juga pada bagian 000-default.conf, maka akan berubah menjadi <*VirtualHost* *:81>

```
devasc@labvm:~/labs/devnet-src/ansible/ansible-apache$ cat /etc/apache2/ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 8081

<IfModule ssl_module>
        Listen 443
</IfModule>

<IfModule mod_gnutls.c>
        Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

24. Dari hasil diatas pengujian dilakukan pada tempat Firefox didapatkan hasil kinerja pakai pada CPU adalah 3.8% pada *Memory* adalah 472.7 MB



25. Pemeriksaan pada system monitor devasc yang berada pada pnetlab mendapatkan hasil kinerja pakai CPU sebesar :
    - CPU 1 = 3.9%
    - CPU 2 = 40.2%
    - CPU 3 = 13.0%
    - CPU 4 = 8.7%

    Pada penggunaan Memory sebesar 780.7 MB dari 3.8 GB presentase sebesar 19.8%