

Laporang Pengerjaan Soal Nomor 3

ID Peserta: 01

Nama: Achmad Alif Nasrulloh

A. Konfigurasi Dasar :

1. Buat user dengan akses sudo, login menggunakan kata sandi dan menggunakan pubkey.

Copy public key ke /etc/skel agar saat pembuatan user sudah otomatis ada file adm.pub.

```
root@semesta-lab-01:~# cp /home/semesta/adm.pub /etc/skel/
root@semesta-lab-01:~# ls /etc/skel/
adm.pub
```

Gunakan bash script looping untuk menambahkan banyak user.

```
root@semesta-lab-01:~# for i in {1..100}; do useradd sevima-adm$i -s /bin
/bash -m; passwd sevima-adm$i <<< "S3m3st4#2025"$'\n'"S3m3st4#2025"; done
New password: Retype new password: passwd: password updated successfully
New password: Retype new password: passwd: password updated successfully
New password: Retype new password: passwd: password updated successfully
```

Verifikasi jumlah user yang dibuat.

```
root@semesta-lab-01:~# cat /etc/passwd | grep sevima-adm* | wc -l
100
root@semesta-lab-01:~#
```

Gunakan bash script looping untuk menambahkan banyak user kedalam group sudo.

```
root@semesta-lab-01:~# for i in {1..100}; do usermod -a -G sudo sevima-adm$i; done
root@semesta-lab-01:~#
```

Verifikasi jumlah user yang masuk kedalam group sudo.

```
root@semesta-lab-01:~# cat /etc/group | grep sudo
sudo:x:27:sevima,sevima-adn1,sevima-adn2,sevima-adn3,sevima-adn4,sevima-adn5,sevima-adn6,sevima-adn7,sevima-adn8,sevima-adn9,sevima-adn10,sevima-adn11,sevima-adn12,sevima-adn13,sevima-adn14,sevima-adn15,sevima-adn16,sevima-adn17,sevima-adn18,sevima-adn19,sevima-adn20,sevima-adn21,sevima-adn22,sevima-adn23,sevima-adn24,sevima-adn25,sevima-adn26,sevima-adn27,sevima-adn28,sevima-adn29,sevima-adn30,sevima-adn31,sevima-adn32,sevima-adn33,sevima-adn34,sevima-adn35,sevima-adn36,sevima-adn37,sevima-adn38,sevima-adn39,sevima-adn40,sevima-adn41,sevima-adn42,sevima-adn43,sevima-adn44,sevima-adn45,sevima-adn46,sevima-adn47,sevima-adn48,sevima-adn49,sevima-adn50,sevima-adn51,sevima-adn52,sevima-adn53,sevima-adn54,sevima-adn55,sevima-adn56,sevima-adn57,sevima-adn58,sevima-adn59,sevima-adn60,sevima-adn61,sevima-adn62,sevima-adn63,sevima-adn64,sevima-adn65,sevima-adn66,sevima-adn67,sevima-adn68,sevima-adn69,sevima-adn70,sevima-adn71,sevima-adn72,sevima-adn73,sevima-adn74,sevima-adn75,sevima-adn76,sevima-adn77,sevima-adn78,sevima-adn79,sevima-adn80,sevima-adn81,sevima-adn82,sevima-adn83,sevima-adn84,sevima-adn85,sevima-adn86,sevima-adn87,sevima-adn88,sevima-adn89,sevima-adn90,sevima-adn91,sevima-adn92,sevima-adn93,sevima-adn94,sevima-adn95,sevima-adn96,sevima-adn97,sevima-adn98,sevima-adn99,sevima-adn100
root@semesta-lab-01:~#
```

2. Ubah port ssh menjadi 2025.

Edit file /etc/ssh/sshd_config, dan ubah konfigurasi PermitRootLogin no.

```
root@semesta-lab-01:~# cat /etc/ssh/sshd_config | grep 'Port 2025'
Port 2025
root@semesta-lab-01:~#
```

Setelah itu restart service ssh.

```
root@semesta-lab-01:~# systemctl restart ssh
root@semesta-lab-01:~# systemctl daemon-reload
```

Dan allow port 2025/tcp pada ufw.

```
root@semesta-lab-01:~# ufw allow 2025/tcp
Rule added
Rule added (v6)
root@semesta-lab-01:~#
```

3. Aktifkan seluruh log aktivitas.

Edit file /etc/ssh/sshd_config, dan ubah konfigurasi

as

4. Penyesuaian sumber daya.

Edit file /etc/ssh/sshd_config, dan ubah konfigurasi

as

5. Buat LVM dari block sdc dan pastikan dienkripsi.

Edit file /etc/ssh/sshd_config, dan ubah konfigurasi

as

B. CA :

1. Buat root CA pada folder /root/ca.

Buat folder /root/ca.

```
root@semesta-lab-01:~# mkdir /root/ca
root@semesta-lab-01:~# cd /root/ca/
root@semesta-lab-01:~/ca#
```

2. Buat root CA (cacert.pem dan cacert.key) dengan informasi berikut.

Buat cacert.key dan buat file ca.conf untuk memasukkan informasi terkait CA.

```
root@semesta-lab-01:~/ca# openssl genrsa -out cacert.key
root@semesta-lab-01:~/ca# nano ca.conf
```

Isi dari file ca.conf sebagai berikut.

```
[ req ]
prompt                = no
distinguished_name    = dn
x509_extensions       = v3_ca

[ dn ]
C    = ID
ST   = Jawa Timur
L    = Surabaya
O    = PT. Sentra Vidya Utama
CN   = SEVIMA CA

[ v3_ca ]
keyUsage = critical, keyCertSign
basicConstraints = critical, CA:true
```

Setelah itu generate cacert.pem.

```
root@semesta-lab-01:~/ca# openssl req -x509 -new -key cacert.key -out cacert.pem -days 365 -config ca.conf
root@semesta-lab-01:~/ca# ls
cacert.key  cacert.pem  ca.conf
root@semesta-lab-01:~/ca#
```

Selanjutnya adalah menerbitkan certificate dengan ca yang sudah dibuat. Karena certificate yang dibuat cukup banyak, jadi saya memanfaatkan bash scripting looping lagi untuk generate certificate key, csr, san dan pem.

```
root@semesta-lab-01:~/ca# for i in {www,utara,timur,barat}; do
# Membuat private key RSA
openssl genrsa -out $i.sevima.site.key

# Membuat CSR (Certificate Signing Request)
openssl req -new -key $i.sevima.site.key -out $i.sevima.site.csr -subj "/C=ID/ST=Jawa Timur/L=Surabaya/O=PT. Sentra Vidya Utama/CN=$i.sevima.site/"

# Menulis subjectAltName ke file .txt
echo "subjectAltName = DNS:$i.sevima.site" > $i.sevima.site.txt

# Membuat sertifikat menggunakan CA
openssl x509 -req -in $i.sevima.site.csr -CA cacert.pem -CAkey cacert.key -CAcreateserial -out $i.sevima.site.pem -days 365 -sha256 -extfile $i.sevima.site.txt
done
```

Semua certificate sudah dibuat.

```

root@semesta-lab-01:~/ca# ls
barat.sevima.site.csr  barat.sevima.site.txt  cacert.srl  timur.sevima.site.key  utara.sevima.site.csr  utara.sevima.site.txt  www.sevima.site.pem
barat.sevima.site.key  cacert.key             ca.conf     timur.sevima.site.pem  utara.sevima.site.key  www.sevima.site.csr   www.sevima.site.txt
barat.sevima.site.pem  cacert.pem             timur.sevima.site.csr  timur.sevima.site.txt  utara.sevima.site.pem  www.sevima.site.key
root@semesta-lab-01:~/ca#

```

B. Web Server :

A. Install apache dan nginx.

Karena apache dan nginx diinstall di server yang sama, maka harus di bedakan portnya agar tidak konflik.

```

root@semesta-lab-01:~# apt install apache2 nginx -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.7).
nginx is already the newest version (1.24.0-2ubuntu7.4).
0 upgraded, 0 newly installed, 0 to remove and 89 not upgraded.
root@semesta-lab-01:~#

```

1. Konfigurasi Apache.

Ubah port apache terlebih dahulu dengan edit file /etc/apache2/ports.conf yang awalnya listen 80 ke 8001. Lalu restart servicenya.

```

root@semesta-lab-01:~# cat /etc/apache2/ports.conf | grep 8001
Listen 8001
root@semesta-lab-01:~# systemctl restart apache2
root@semesta-lab-01:~#

```

Lalu edit file html sesuai yang diperintahkan.

```

root@semesta-lab-01:~# echo "Hello World from Utara Site" > /var/www/html/index.html
root@semesta-lab-01:~#

```



```
root@semesta-lab-01:~# cd /etc/apache2/sites-available/  
root@semesta-lab-01:/etc/apache2/sites-available# cp 000-default.conf utara.sevima.site.conf  
root@semesta-lab-01:/etc/apache2/sites-available#
```

Isi konfigurasi dan jangan lupa restart service.

```
root@semesta-lab-01:/etc/apache2/sites-available# cat utara.sevima.site.conf  
<VirtualHost *:8001>  
    ServerName utara.sevima.site  
    Header set X-Owner-By "Achmad Alif Nasrulloh"  
    Header set X-Served-By "apache2"  
    DocumentRoot /var/www/html/  
    ErrorLog ${APACHE_LOG_DIR}/error-utara.sevima.site.log  
    CustomLog ${APACHE_LOG_DIR}/access-utara.sevima.site.log combined  
</VirtualHost>  
root@semesta-lab-01:/etc/apache2/sites-available# a2enmod headers  
Module headers already enabled  
root@semesta-lab-01:/etc/apache2/sites-available# a2ensite utara.sevima.site.conf  
Site utara.sevima.site already enabled  
root@semesta-lab-01:/etc/apache2/sites-available# systemctl restart apache2  
root@semesta-lab-01:/etc/apache2/sites-available#
```

Jangan lupa allow port di ufw dan lakukan verifikasi. Untuk verifikasi tambahkan local resolver di file /etc/hosts seperti gambar dibawah ini.

```
root@semesta-lab-01:~# grep -i '192.168.99.11' /etc/hosts  
192.168.99.11 www.sevima.site utara.sevima.site timur.sevima.site barat.sevima.site  
root@semesta-lab-01:~#
```

Lalu test menggunakan curl.

```
root@semesta-lab-01:~# curl -I http://utara.sevima.site:8001  
HTTP/1.1 200 OK  
Date: Sat, 19 Jul 2025 06:21:59 GMT  
Server: Apache/2.4.58 (Ubuntu)  
Last-Modified: Sat, 19 Jul 2025 05:43:43 GMT  
ETag: "1c-63a41b9b45153"  
Accept-Ranges: bytes  
Content-Length: 28  
X-Owner-By: Achmad Alif Nasrulloh  
X-Served-By: apache2  
Content-Type: text/html
```

2. Konfigurasi Nginx.

Ubah port nginx terlebih dahulu dengan edit file /etc/nginx/sites-available/default yang awalnya listen 80 ke 8101. Lalu restart servicenya.

```
root@semesta-lab-01:~# cat /etc/nginx/sites-available/default
server {
    listen 8101 default_server;
    listen [::]:8101 default_server;
    root /var/www/html;
    index index.nginx-debian.html;
    server_name _;
    location / {
        try_files $uri $uri/ =404;
    }
}
```

Lalu edit file html sesuai yang diperintahkan.

```
root@semesta-lab-01:~# echo "Hello World from Timur Site" > /var/www/html/index.nginx-debian.html
root@semesta-lab-01:~#
```

Lalu salin konfigurasi default jadi timur.sevima.site di /etc/nginx/sites-enabled dan edit file tersebut.

```
root@semesta-lab-01:~# cd /etc/nginx/sites-enabled/
root@semesta-lab-01:/etc/nginx/sites-enabled# cp default timur.sevima.site
root@semesta-lab-01:/etc/nginx/sites-enabled#
```

Isi konfigurasi dan jangan lupa restart service.

```
root@semesta-lab-01:/etc/nginx/sites-enabled# cat timur.sevima.site
server {
    listen 8101;
    listen [::]:8101;
    root /var/www/html;
    index index.nginx-debian.html;
    server_name timur.sevima.site;
    add_header X-Owner-By "Achmad Alif Nasrulloh";
    add_header X-Served-By "nginx";
    location / {
        try_files $uri $uri/ =404;
    }
}
root@semesta-lab-01:/etc/nginx/sites-enabled# systemctl restart nginx
root@semesta-lab-01:/etc/nginx/sites-enabled#
```

Jangan lupa allow port di ufw dan lakukan verifikasi. Lalu test menggunakan curl.

```
root@semesta-lab-01:~# curl -I http://timur.sevima.site:8101
HTTP/1.1 200 OK
Server: nginx/1.24.0 (Ubuntu)
Date: Sat, 19 Jul 2025 06:23:11 GMT
Content-Type: text/html
Content-Length: 28
Last-Modified: Sat, 19 Jul 2025 06:00:02 GMT
Connection: keep-alive
ETag: "687b3462-1c"
X-Owner-By: Achmad Alif Nasrulloh
X-Served-By: nginx
Accept-Ranges: bytes
```

2. Konfigurasi Https Nginx.

Lalu edit file html sesuai yang diperintahkan.

```
root@semesta-lab-01:~# echo "Hello World from Barat Site" > /var/www/html/barat.sevima.site.html
root@semesta-lab-01:~#
```

Lalu salin konfigurasi timur.sevima.site jadi barat.sevima.site di /etc/nginx/sites-enabled dan edit file tersebut.

```
root@semesta-lab-01:~# cd /etc/nginx/sites-enabled/
root@semesta-lab-01:/etc/nginx/sites-enabled# cp timur.sevima.site barat.sevima.site
root@semesta-lab-01:/etc/nginx/sites-enabled#
```

Isi konfigurasi dan jangan lupa restart service.

```
root@semesta-lab-01:/etc/nginx/sites-enabled# cat barat.sevima.site
server {
    listen 8443 ssl;
    listen [::]:8443 ssl;

    ssl_certificate /root/ca/barat.sevima.site.pem;
    ssl_certificate_key /root/ca/barat.sevima.site.key;

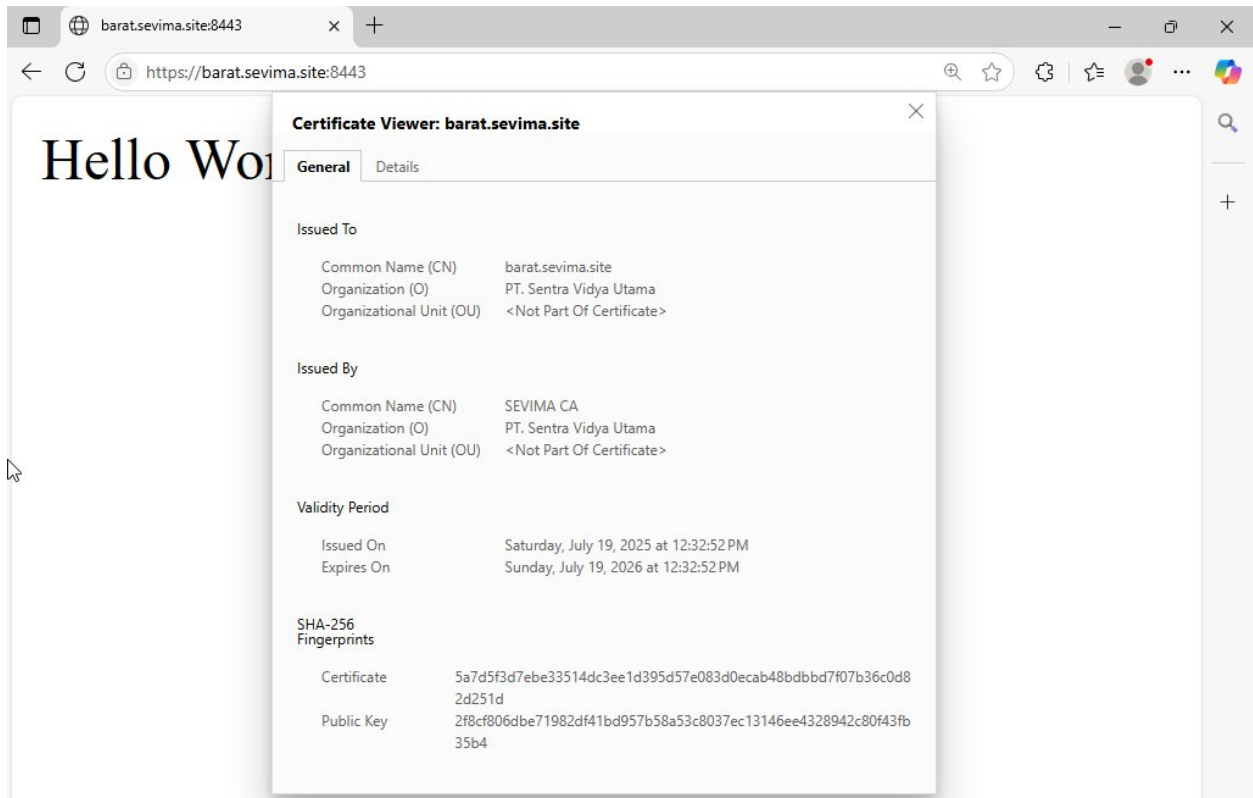
    root /var/www/html;
    index barat.sevima.site.html;

    server_name barat.sevima.site;

    add_header X-Owner-By "Achmad Alif Nasrulloh";
    add_header X-Served-By "nginx";

    location / {
        try_files $uri $uri/ =404;
    }
}
root@semesta-lab-01:/etc/nginx/sites-enabled# systemctl restart nginx
root@semesta-lab-01:/etc/nginx/sites-enabled#
```


Jangan lupa allow port di ufw dan lakukan verifikasi. Untuk verifikasi pastikan install cacert.pem di browser client dan coba akses domainnya.



D. Loadbalancer Haproxy :

1. Install dan konfigurasi untuk www.sevima.site.

```
root@semesta-lab-01:~# apt install haproxy -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
haproxy is already the newest version (2.8.5-1ubuntu3.3).
0 upgraded, 0 newly installed, 0 to remove and 82 not upgraded.
```

Install haproxy dan tambahkan konfigurasi berikut di /etc/haproxy/haproxy.cfg untuk konfigurasi frontend dan backend http maupun https.

```

frontend http-in
    bind *:80
    default_backend backend_servers
    option forwardfor

backend backend_servers
    balance roundrobin
    server utara utara.sevima.site:8001 check
    server timur timur.sevima.site:8101 check

frontend https-in
    bind *:443 ssl crt /etc/haproxy/barat.sevima.site.bundle.pem
    default_backend backends_servers
    option forwardfor

backend backends_servers
    balance roundrobin
    server utara utara.sevima.site:8001 check
    server timur timur.sevima.site:8101 check

```

Setelah itu jangan lupa buat bundle certificate dari www.sevima.site.pem dan www.sevima.site.key menjadi `www.sevima.site.bundle.pem`.

```

root@semesta-lab-01:~# cat /root/ca/www.sevima.site.pem > /etc/haproxy/barat.sevima.site.bundle.pem
root@semesta-lab-01:~# cat /root/ca/www.sevima.site.key >> /etc/haproxy/barat.sevima.site.bundle.pem
root@semesta-lab-01:~#

```

Lalu restart service haproxy dan uji coba dari client, pastikan ketika di refresh tampilannya berubah ubah.

