

# TUGAS 1 SISTEM TERDISTRIBUSI

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1. Buat container microservice1

```
# sudo lxc-create --name microservice1 --template download -- --dist "ubuntu" --release "focal" --arch amd64
```

```
adedian@DESKTOP-3V50F26:~$ sudo lxc-create --name microservice_1 --template download -- --dist "ubuntu" --release "focal" --arch amd64
Using image from local cache
Unpacking the rootfs

---

You just created an Ubuntu focal amd64 (20240326_07:42) container.

To enable SSH, run: apt install openssh-server
No default root or user password are set by LXC.
```

2. Buat container microservice2

```
# sudo lxc-create --name microservice2 --template download -- --dist "ubuntu" --release "bionic" --arch amd64
```

```
adedian@DESKTOP-3V50F26:~$ sudo lxc-create --name microservice_2 --template download -- --dist "ubuntu" --release "bionic" --arch amd64
Using image from local cache
Unpacking the rootfs

---

You just created an Ubuntu bionic amd64 (20240326_07:42) container.

To enable SSH, run: apt install openssh-server
No default root or user password are set by LXC.
```

3. Jalankan container yang sudah di buat tadi

```
# sudo lxc-start microservice_1
# sudo lxc-start microservice_2
# sudo lxc-ls -f
```

```
adedian@DESKTOP-3V50F26:~$ sudo lxc-start microservice_1
adedian@DESKTOP-3V50F26:~$ sudo lxc-start microservice_2
adedian@DESKTOP-3V50F26:~$ sudo lxc-ls -f
NAME          STATE    AUTOSTART  GROUPS  IPV4      IPV6  UNPRIVILEGED
microservice_1 RUNNING  0          -       10.0.3.39 -       false
microservice_2 RUNNING  0          -       10.0.3.142 -       false
```

4. Setting konfigurasi microservice\_1

```
# lxc-attach -n microservice1
# apt update
# apt install nginx nginx-extras nano net-tools curl
```

```
adedian@DESKTOP-3V50F26:~$ lxc-attach -n microservice1
lxc-attach: microservice1: attach.c: get_attach_context: 405 Connection refused - Failed to get init pid
lxc-attach: microservice1: attach.c: lxc_attach: 1469 Connection refused - Failed to get attach context
adedian@DESKTOP-3V50F26:~$ sudo lxc-attach -n microservice_1
root@microservice1:/# apt update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [2821 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [3200 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [427 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [2699 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [377 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [952 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [200 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal-updates/main Translation-en [510 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [2815 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [392 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1177 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [282 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [26.2 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7880 B]
Fetched 16.1 MB in 8s (1898 kB/s)
Reading package lists... Done
```

#exit

5. setting static IP di microservice1

# nano /etc/netplan/10-lxc.yaml

```
root@microservice1: /
GNU nano 4.8
network:
  version: 2
  ethernet:
    eth0:
      dhcp4: false
      addresses: [10.0.3.39/24]
      gateway4: 10.0.3.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
```

# sudo netplan apply

# ifconfig

```
root@microservice1:/# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.3.39 netmask 255.255.255.0 broadcast 10.0.3.255
    inet6 fe80::216:3eff:fe4d:1774 prefixlen 64 scopeid 0x20<link>
    ether 00:16:3e:4d:17:74 txqueuelen 1000 (Ethernet)
    RX packets 18130 bytes 34186498 (34.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 15058 bytes 1144905 (1.1 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 46 bytes 4788 (4.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 46 bytes 4788 (4.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

6. setting network interfaces

# nano /etc/network/interfaces

# interfaces(5) file used by ifup(8) and ifdown(8)

# Include files from /etc/network/interfaces.d:

auto lo

iface lo inet loopback

auto eth0

iface eth0 inet static

addresses 10.0.3.39

netmask 255.255.255.0

gateway 10.0.3.1

dns-nameservers 8.8.8.8, 1.1.1.1

source-directory /etc/network/interfaces.d

```
root@microservice1: /
GNU nano 4.8
# interfaces(5) file used by ifup(8) and ifdown(8)
# Include files from /etc/network/interfaces.d:
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
    addresses 10.0.3.39
    netmask 255.255.255.0
    gateway 10.0.3.1
    dns-nameservers 8.8.8.8, 1.1.1.1

source-directory /etc/network/interfaces.d
```

#### 7. Setting nginx

```
# cd /etc/nginx/sites-available
# touch microservice1.dev
# nano microservice1.dev
```

```
root@microservice1: /var/www
GNU nano 4.8
server {

    listen 80;
    listen [::]:80;

    server_name microservice1.dev;

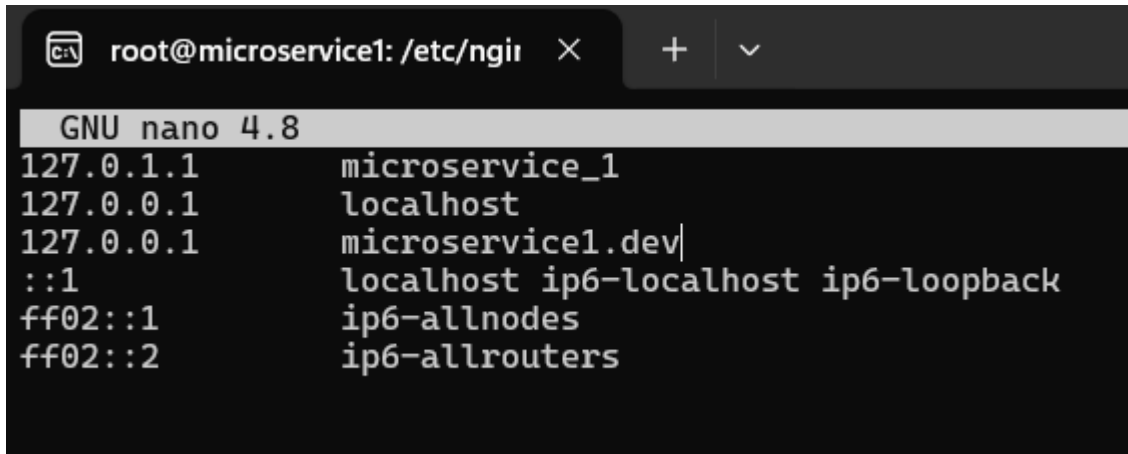
    root /var/www/html/microservice;
    index index.html;

    location / {
        try_files $uri $uri/ =404;
    }

}
```

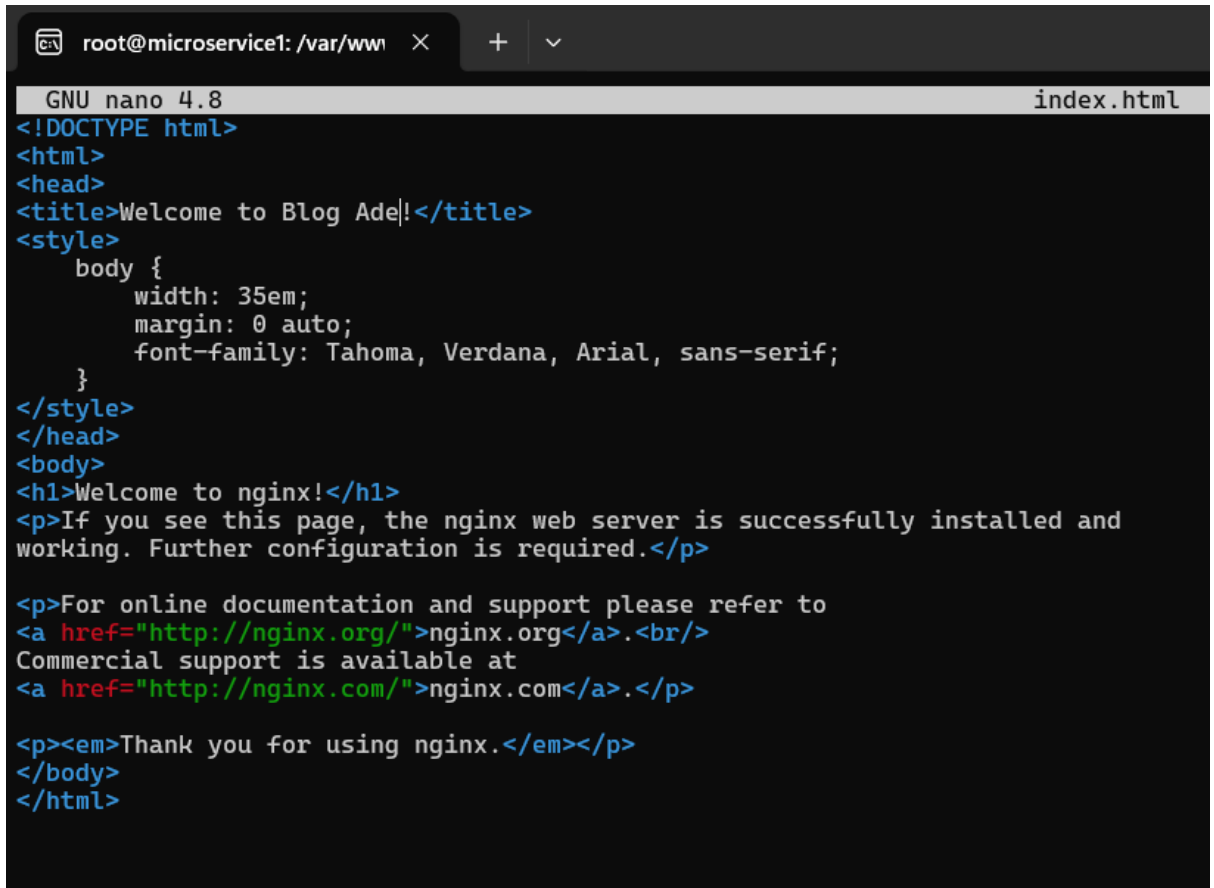
```
# cd ../sites-enabled
# ln -s /etc/nginx/sites-available/microservice1.dev .
# nginx -t
```

```
# nginx -s reload
# nano /etc/hosts
```

A terminal window titled 'root@microservice1: /etc/nginx' with a tab icon and window controls. The GNU nano 4.8 editor is open, displaying the /etc/hosts file. The file contains the following entries:

```
127.0.1.1      microservice_1
127.0.0.1      localhost
127.0.0.1      microservice1.dev|
::1           localhost ip6-localhost ip6-loopback
ff02::1       ip6-allnodes
ff02::2       ip6-allrouters
```

```
# cd /var/www/html && mkdir microservice
# cp index.nginx-debian.html microservice/index.html
# cd microservice && nano index.html
```

A terminal window titled 'root@microservice1: /var/www' with a tab icon and window controls. The GNU nano 4.8 editor is open, displaying the index.html file. The file contains the following HTML code:

```
<!DOCTYPE html>
<html>
<head>
<title>Welcome to Blog Ade!</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

8. Lakukan curl ke microservice1  
# curl http://microservice1.dev

```

root@microservice1:/var/www/html# curl http://microservice1.dev
<!DOCTYPE html>
<html>
<head>
<title>Welcome to Blog Ade!</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
root@microservice1:/var/www/html# |

```

## 9. Setting Konfigurasi microservice\_2

```
# sudo lxc-attach -n microservice_2
```

```
# apt update && apt install nginx ifupdown net-tools nginx-extras nano curl -y
```

```

adedian@DESKTOP-3V50F26:~$ sudo lxc-attach -n microservice_2
[sudo] password for adedian:
root@microservice_2:/# apt update && apt install nginx ifupdown net-tools nginx-extras nano curl -y
Hit:1 http://security.ubuntu.com/ubuntu bionic-security InRelease
Hit:2 http://archive.ubuntu.com/ubuntu bionic InRelease
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [3045 kB]
Fetched 3134 kB in 5s (696 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core geoip-database libasn1-8-heimdal libcurl4 libfontconfig1 libfreetype6 libgd3
  libgeoip1 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhiredis0.13 libhx509
  libjpeg-turbo8 libjpeg8 libkrb5-26-heimdal libldap-2.4-2 libldap-common liblua5.1-2 liblua5.1-common libn
  libnginx-mod-http-auth-pam libnginx-mod-http-cache-purge libnginx-mod-http-dav-ext libnginx-mod-http-echo libngin
  libnginx-mod-http-geoip libnginx-mod-http-headers-more-filter libnginx-mod-http-image-filter libnginx-mod-http-lu
  libnginx-mod-http-perl libnginx-mod-http-subfilter libnginx-mod-http-uploadprogress libnginx-mod-http-upstream
  libnginx-mod-http-xslt-filter libnginx-mod-mail libnginx-mod-nchan libnginx-mod-stream libperl5.26 libpng16-16 li
  librtmp1 libsasl2-2 libsasl2-modules libsasl2-modules-db libtiff5 libwebp6 libwind0-heimdal libxpm4 libxslt1.1 ng

```

```
# sudo nano /etc/netplan/10-lxc.yaml
```

```
root@microservice_2: /
GNU nano 2.9.3

network:
  version: 2
  ethernet:
    eth0:
      dhcp4: false
      addresses: [10.0.3.142/24]
      gateway4: 10.0.3.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
```

# sudo netplan apply

# ifconfig

```
root@microservice_2: /# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.3.142 netmask 255.255.255.0 broadcast 10.0.3.255
    inet6 fe80::216:3eff:fed8:8a82 prefixlen 64 scopeid 0x20<link>
    ether 00:16:3e:d8:8a:82 txqueuelen 1000 (Ethernet)
    RX packets 10632 bytes 19717975 (19.7 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8600 bytes 656252 (656.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 34 bytes 3880 (3.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 34 bytes 3880 (3.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Setting network interfaces

# nano /etc/network/interfaces

```

GNU nano 4.8 /etc/network/interfaces
# interfaces(5) file used by ifup(8) and ifdown(8)
# Include files from /etc/network/interfaces.d:

auto lo
iface lo inet loopback

# primary
auto eth0
iface eth0 inet static
    address 10.0.3.152
    netmask 255.255.255.0
    gateway 10.0.3.1

source-directory /etc/network/interfaces.d

```

# sudo systemctl restart NetworkManager

# ifconfig

```

root@microservice2:/# sudo systemctl restart NetworkManager
root@microservice2:/# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 10.0.3.74 netmask 255.255.255.0  broadcast 10.0.3.255
    inet6 fe80::216:3eff:fe0:9074 prefixlen 64 scopeid 0x20<link>
    ether 00:16:3e:f0:90:74 txqueuelen 1000 (Ethernet)
    RX packets 7040  bytes 26908992 (26.9 MB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 5723  bytes 441099 (441.0 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 70  bytes 8044 (8.0 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 70  bytes 8044 (8.0 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

```

Setting nginx

# cd /etc/nginx/sites-available && touch microservice2.dev && nano microservice2.dev

```
root@microservice_2: /var/www
GNU nano 2.9.3 /etc/nginx/sites-enabled/microservice2.conf

server {

    listen 80;
    listen [::]:80;

    server_name microservice2.dev;

    root /var/www/html/microservice;
    index index.html;

    location / {
        try_files $uri $uri/ =404;
    }
}
```

```
# cd ../sites-enabled
# ln -s /etc/nginx/sites-available/microservice2.conf
# nginx -t && nginx -s reload
# nano /etc/hosts
```

```
root@microservice_2: /etc/hosts
GNU nano 2.9.3

127.0.1.1      microservice_2
127.0.0.1      localhost
127.0.1.1      microservice2.dev
::1           localhost ip6-localhost ip6-loopback
ff02::1       ip6-allnodes
ff02::2       ip6-allrouters
```

```
# cd /var/www/html && mkdir microservice
# cp index.nginx-debian.html microservice/index.html && nano microservice2/index.html
```



```
root@microservice_2: /var/www × + ▾
GNU nano 2.9.3 microservice/index.html

<!DOCTYPE html>
<html>
<head>
<title>Welcome to About US ADE</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

# curl -i <http://microservice2.dev>

```

root@microservice_2:/var/www/html# curl -i http://microservice2.dev
HTTP/1.1 200 OK
Server: nginx/1.14.0 (Ubuntu)
Date: Sat, 06 Apr 2024 12:48:20 GMT
Content-Type: text/html
Content-Length: 618
Last-Modified: Sat, 06 Apr 2024 12:46:02 GMT
Connection: keep-alive
ETag: "6611440a-26a"
Accept-Ranges: bytes

<!DOCTYPE html>
<html>
<head>
<title>Welcome to About US ADE</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

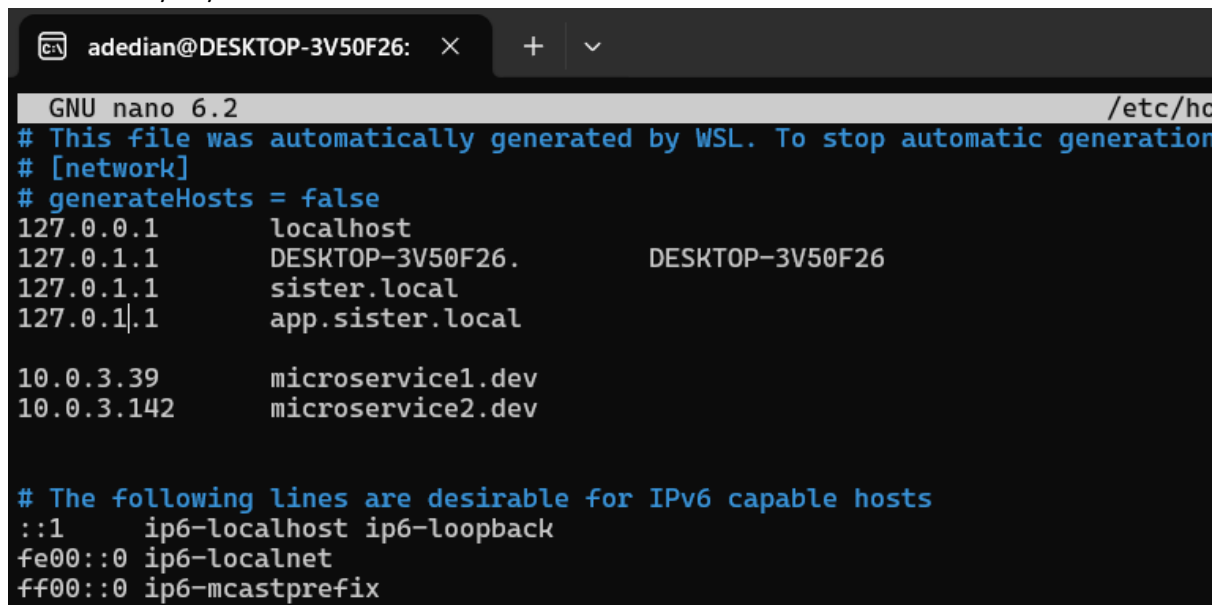
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>

```

#### 10. Setting hosts di WSL Ubuntu 22.04

```
# sudo nano /etc/hosts
```



```

GNU nano 6.2 /etc/hosts
# This file was automatically generated by WSL. To stop automatic generation
# [network]
# generateHosts = false
127.0.0.1    localhost
127.0.1.1    DESKTOP-3V50F26.    DESKTOP-3V50F26
127.0.1.1    sister.local
127.0.1.1    app.sister.local

10.0.3.39    microservice1.dev
10.0.3.142   microservice2.dev

# The following lines are desirable for IPv6 capable hosts
::1          ip6-localhost ip6-loopback
fe00::0      ip6-localnet
ff00::0      ip6-mcastprefix

```

```
# cd /etc/nginx/sites-available
```

```
# touch sister.local
```

```
# nano sister.local
```

```

server {
    listen 80;
    listen [::]:80;

    server_name sister.local;
    server_name app.sister.local;

    root /var/www/html;
    index index.html;

    location /blog {
        rewrite /blog/?(.*)$ /$1 break;
        proxy_pass http://microservice1.dev;
    }
    location /aboutus {
        rewrite /aboutus/?(.*)$ /$1 break;
        proxy_pass http://microservice2.dev;
    }

    location / {
        try_files $uri $uri/ =404;|
    }
}

```

# cd ../sites-enabled

# sudo ln -s /etc/nginx/sites-available/sister.local .

# sudo nginx -t

# sudo nginx -s reload

```

adedian@DESKTOP-3V50F26:~$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
adedian@DESKTOP-3V50F26:~$ sudo nginx -s reload

```

Test curl sister.local

# curl -i [sister.local](http://sister.local)

```
adedian@DESKTOP-3V50F26:~$ curl -i sister.local
HTTP/1.1 200 OK
Server: nginx/1.18.0 (Ubuntu)
Date: Sat, 06 Apr 2024 12:56:15 GMT
Content-Type: text/html
Content-Length: 612
Last-Modified: Sun, 31 Mar 2024 19:49:26 GMT
Connection: keep-alive
ETag: "6609be46-264"
Accept-Ranges: bytes

<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

```
# curl -i sister.local/blog
```

```
adedian@DESKTOP-3V50F26:~$ curl -i sister.local/blog
HTTP/1.1 200 OK
Server: nginx/1.18.0 (Ubuntu)
Date: Sat, 06 Apr 2024 12:56:58 GMT
Content-Type: text/html
Content-Length: 615
Connection: keep-alive
Last-Modified: Sat, 06 Apr 2024 12:30:32 GMT
ETag: "66114068-267"
Accept-Ranges: bytes

<!DOCTYPE html>
<html>
<head>
<title>Welcome to Blog Ade!</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

```
# curl -i sister.local/aboutus
```

```
adedian@DESKTOP-3V50F26:~$ curl -i sister.local/aboutus
HTTP/1.1 200 OK
Server: nginx/1.18.0 (Ubuntu)
Date: Sat, 06 Apr 2024 12:57:21 GMT
Content-Type: text/html
Content-Length: 618
Connection: keep-alive
Last-Modified: Sat, 06 Apr 2024 12:46:02 GMT
ETag: "6611440a-26a"
Accept-Ranges: bytes

<!DOCTYPE html>
<html>
<head>
<title>Welcome to About US ADE</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```