1) Install nginx and run nginx on port number 81.


```
Installed:
  nginx.x86_64 1:1.26.3-1.amzn2.0.1

Dependency Installed:
  generic-logos-httpd.noarch 0:18.0.0-4.amzn2      gperftools-libs.x86_64 0:2.6.1-1.amzn2
  openssl11-libs.x86_64 1:1.1.1zb-1.amzn2.0.1      openssl11-pkcs11.x86_64 0:0.4.10-6.amzn

Complete!
[ec2-user@ip-172-31-25-203 ~]$ sudo yum install nginx -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Package 1:nginx-1.26.3-1.amzn2.0.1.x86_64 already installed and latest version
Nothing to do
[ec2-user@ip-172-31-25-203 ~]$ sudo systemctl start nginx
[ec2-user@ip-172-31-25-203 ~]$ ls /etc/nginx/nginx.conf
/etc/nginx/nginx.conf
[ec2-user@ip-172-31-25-203 ~]$ pwd
/home/ec2-user
[ec2-user@ip-172-31-25-203 ~]$ ls
[ec2-user@ip-172-31-25-203 ~]$ sudo sed -i 's/listen        80;/listen        81;/' /etc/n
[ec2-user@ip-172-31-25-203 ~]$ grep "listen" /etc/nginx/nginx.conf
        listen        81;
        listen        [::]:80;
#       listen        443 ssl;
#       listen        [::]:443 ssl;
[ec2-user@ip-172-31-25-203 ~]$
```

54.164.179.117:81   ☆

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

2) Deploy a sample index.html file on nginx.

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Hello from NGINX on port 81!

3) Install Apache and run Apache on port number 82.

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Test Page

This page is used to test the proper operation of the Apache HTTP server after it has been installed. If you can read this page, it means that the Apache HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting www.example.com, you should send e-mail to "webmaster@example.com".

If you are the website administrator:

You may now add content to the directory /var/www/html/. Note that until you do so, people visiting your website will see this page, and not your content. To prevent this page from ever being used, follow the instructions in the file /etc/httpd/conf.d/welcome.conf.
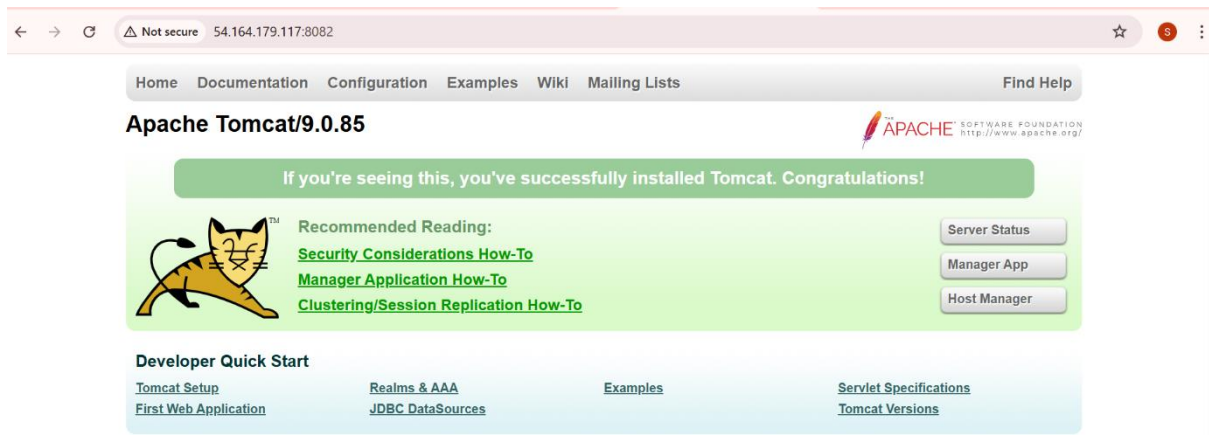
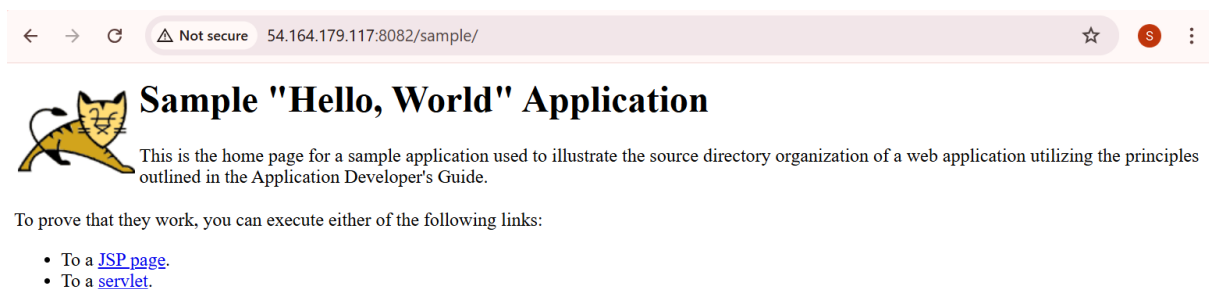You are free to use the image below on web sites powered by the Apache HTTP Server:

Powered by APACHE 2.4

4) Deploy a sample index.html file on Apache.

Hello from Apache on port 82!

5) Install Apache tomcat on port number 8082.

6) Deploy a sample app on webapps.

7) Create a tomcat.service file for tomcat.

```
May 28 00:23:35 ip-172-31-25-203.ec2.internal systemd[1]: tomcat.service failed.
[ec2-user@ip-172-31-25-203 bin]$ sudo nano /etc/systemd/system/tomcat.service
[ec2-user@ip-172-31-25-203 bin]$ sudo nano /etc/systemd/system/tomcat.service
[ec2-user@ip-172-31-25-203 bin]$ sudo nano /etc/systemd/system/tomcat.service
[ec2-user@ip-172-31-25-203 bin]$ sudo systemctl daemon-reexec
[ec2-user@ip-172-31-25-203 bin]$ sudo systemctl daemon-reload
[ec2-user@ip-172-31-25-203 bin]$ sudo systemctl restart tomcat
[ec2-user@ip-172-31-25-203 bin]$ sudo systemctl status tomcat
● tomcat.service - Apache Tomcat Web Application Container
   Loaded: loaded (/etc/systemd/system/tomcat.service; enabled; vendor preset: disabled)
   Active: inactive (dead) since Wed 2025-05-28 00:27:36 UTC; 12s ago
  Process: 2798 ExecStop=/bin/true (code=exited, status=0/SUCCESS)
  Process: 2730 ExecStart=/opt/tomcat/bin/startup.sh (code=exited, status=0/SUCCESS)
 Main PID: 2740 (code=exited, status=0/SUCCESS)

May 28 00:27:34 ip-172-31-25-203.ec2.internal systemd[1]: Starting Apache Tomcat Web Application Container...
May 28 00:27:34 ip-172-31-25-203.ec2.internal startup.sh[2730]: Existing PID file found during start.
May 28 00:27:34 ip-172-31-25-203.ec2.internal startup.sh[2730]: Removing/clearing stale PID file.
May 28 00:27:34 ip-172-31-25-203.ec2.internal systemd[1]: Started Apache Tomcat Web Application Container.
[ec2-user@ip-172-31-25-203 bin]$
```

8) Configure HA Proxy server.

```
[ec2-user@ip-172-31-25-203 bin]$ sudo systemctl status haproxy
● haproxy.service - HAProxy Load Balancer
   Loaded: loaded (/usr/lib/systemd/system/haproxy.service; enabled; vendor preset: disabled)
   Active: active (running) since Wed 2025-05-28 01:02:52 UTC; 3s ago
 Main PID: 24618 (haproxy-systemd)
   CGroup: /system.slice/haproxy.service
           ├─24618 /usr/sbin/haproxy-systemd-wrapper -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid
           ├─24619 /usr/sbin/haproxy -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid -Ds
           └─24620 /usr/sbin/haproxy -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid -Ds
```

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Hello from Apache on port 82 via /apache\!