

RHEL9



Session 3 – 16th October 2022 Summary

- After Login to AWS Account -

A screenshot of the AWS EC2 Dashboard. The left sidebar shows navigation options like EC2 Global View, Events, Tags, Limits, Instances (with sub-options for Instances, Instance Types, and Launch Templates), and more. The main panel is titled 'Resources' and displays a list of EC2 resources in the Asia Pacific (Mumbai) Region. The resources listed are: Instances (running), Dedicated Hosts, Elastic IPs, Instances, Key pairs, Load balancers, Placement groups, Security groups, Snapshots, and Volumes. Each resource has a dropdown arrow next to it.

- Search for ec2 service–

A screenshot of the AWS search results for 'ec2'. The search bar at the top contains 'ec2'. The left sidebar shows the AWS logo, Services, and a search bar with 'ec2'. Below that is a 'Console' section with links for Services (9), Features (46), Blogs (1,814), Documentation (122,170), Knowledge Articles (30), Tutorials (19), Events (10), and Marketplace (1,629). The main search results are displayed under the heading 'Services'. It shows the EC2 service card with the title 'Virtual Servers in the Cloud', a star icon, and 'Top features' including Dashboard, Launch templates, Instances, Spot Instance requests, and Savings plans. Below this is the EC2 Image Builder service card with the title 'A managed service to automate build, customize and deploy OS images'.

The screenshot shows the AWS EC2 Dashboard. On the left sidebar, under the 'Instances' section, the 'Launch Templates' option is selected. In the main content area, there is a large callout box with the heading 'Launch instance'. It contains the text: 'To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.' Below this is a button labeled 'Launch instance' with a small arrow icon above it. A tooltip or secondary action for this button is 'Launch instance from template'. At the bottom of the callout box, a note says: 'Note: Your instances will launch in the Asia Pacific (Mumbai) Region'. To the right of the callout box is a 'Service health' section showing 'Region: Asia Pacific (Mumbai)' and 'Status: This service is operating normally'.

The screenshot shows the 'Launch an instance' wizard. The first step, 'Name and tags', is active. It has a 'Name' field containing 'mylinux'. To the right of the name field is a link 'Add additional tags'. Below this step is another section titled 'Application and OS Images (Amazon Machine Image)', which includes a search bar at the top and a note about AMIs.

Name and tags Info

Name

mylinux

Add additional tags

Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

➤ Select the RedHat Image

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents My AMIs Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE

Red Hat Enterprise Linux 8 (HVM), SSD Volume Type
ami-05c8ca4485f8b138a (64-bit (x86)) / ami-079fd9955144c3788 (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Key pair name - required

Select

hash13_vimal_key

myansible_key

key_aws_training_2022

aws_training_2022_key

key_terraform_training_key

Edit

aws Services Search for services, features, blogs, docs, and more [Alt+S]

EC2

Enable

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

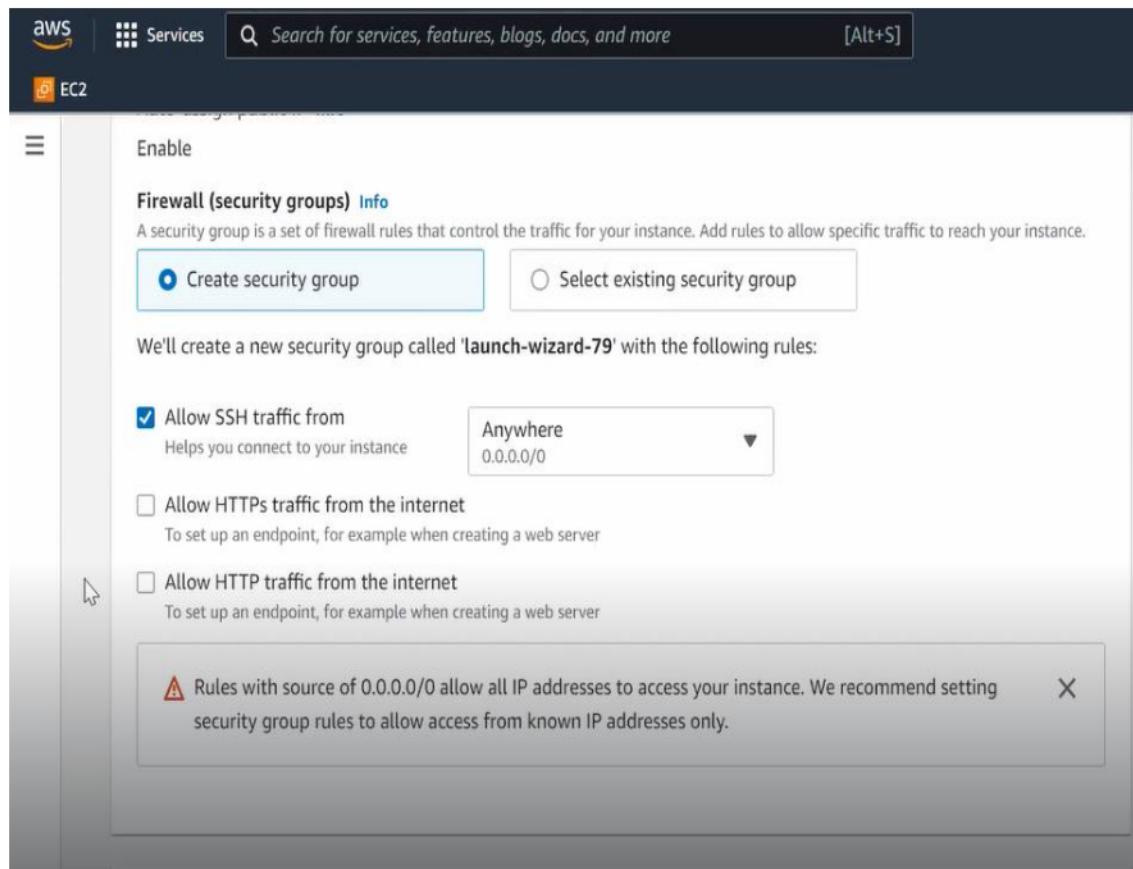
We'll create a new security group called 'launch-wizard-79' with the following rules:

Allow SSH traffic from Anywhere
Helps you connect to your instance

Allow HTTPS traffic from the internet To set up an endpoint, for example when creating a web server

Allow HTTP traffic from the internet To set up an endpoint, for example when creating a web server

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only. X



aws Services Search for services, features, blogs, docs, and more [Alt+S]

EC2

▼ Summary

Number of instances Info

1

Software Image (AMI)

Provided by Red Hat, Inc.
ami-05c8ca4485f8b138a

Virtual server type (instance type)

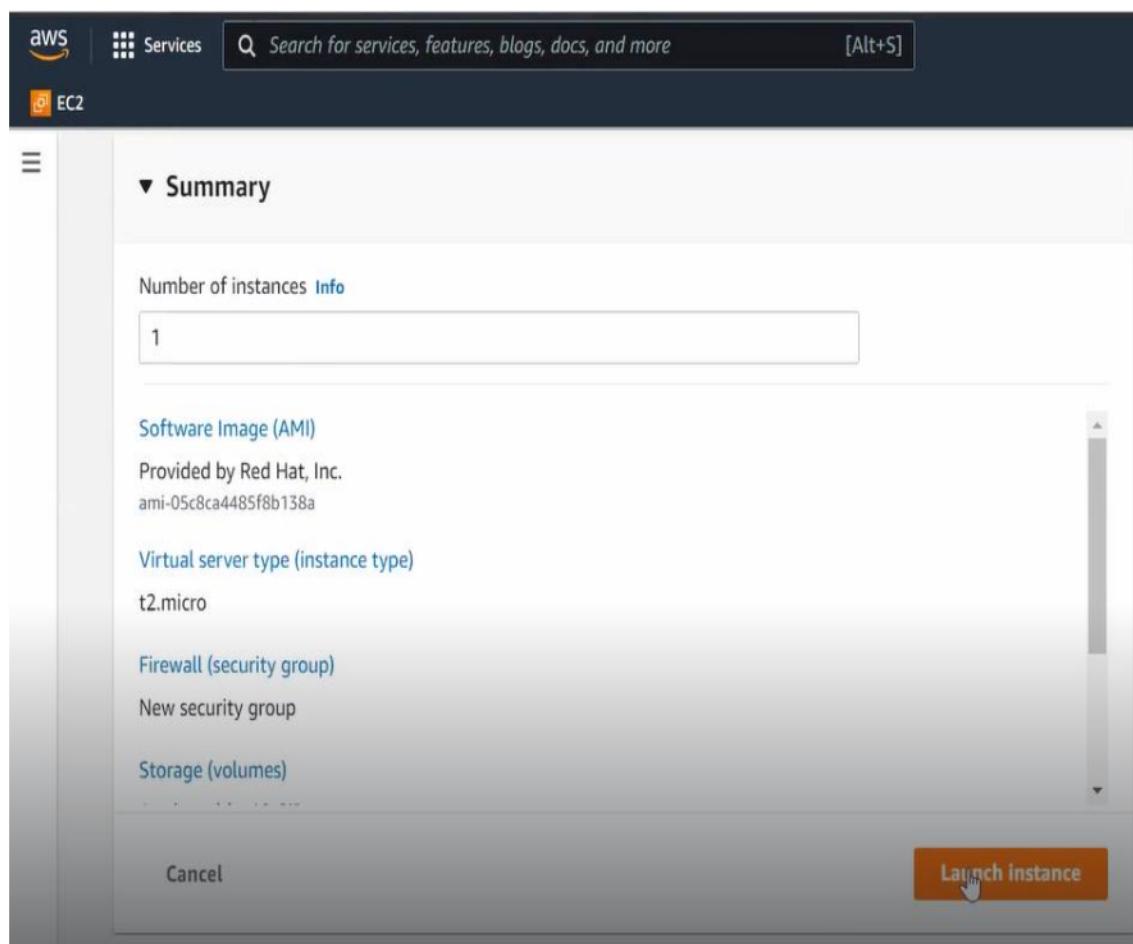
t2.micro

Firewall (security group)

New security group

Storage (volumes)

Cancel Launch instance



The screenshot shows the AWS EC2 Instances launch page. At the top, there's a success message: "Successfully initiated launch of instance (i-04d43de60b8c71345)". Below this, a table details the launch process steps:

Step	Status
Initializing requests	Succeeded
Creating security groups	Succeeded
Creating security group rules	Succeeded
Launch initiation	Succeeded

- After launching the OS – public IP Address is given

The screenshot shows the AWS EC2 Instances page. It displays one instance named "mylinux" with the following details:

Name	Env	Instance ID	Instance state	Availability Zone
mylinux	-	i-04d43de60b8c71345	Running	ap-south-1a

The "Details" tab is selected, showing the instance summary:

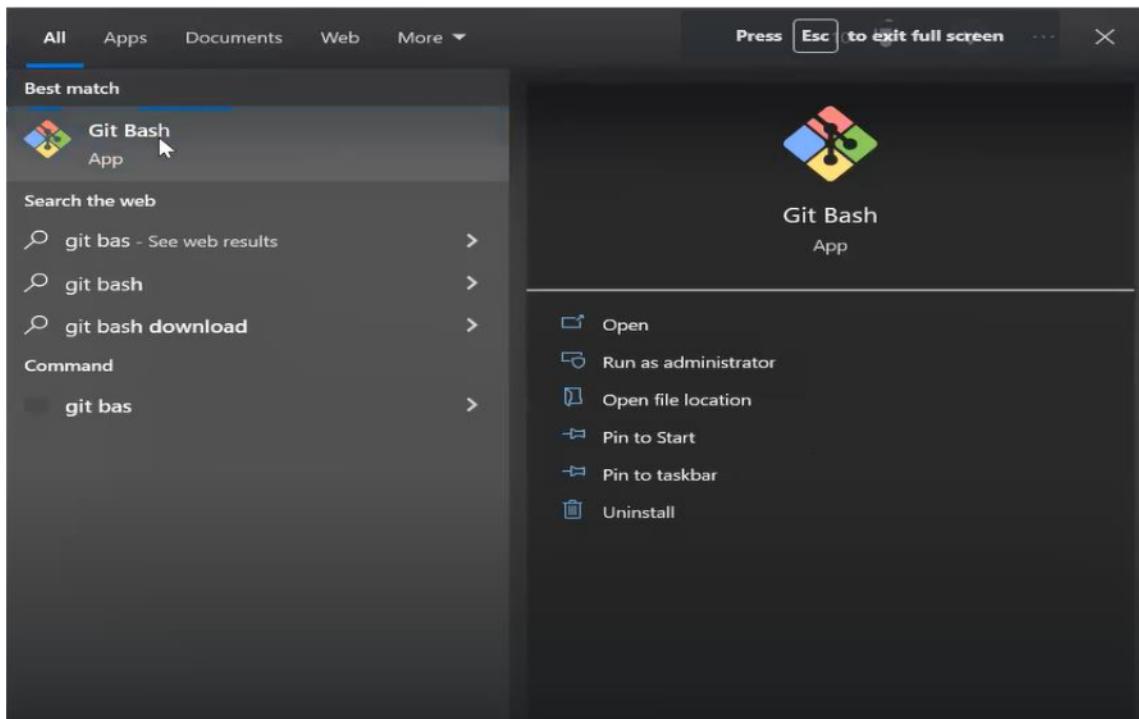
Instance ID	Public IPv4 address	Private IPv4 addresses
i-04d43de60b8c71345 (mylinux)	13.127.25.8 open address	172.31.37.80

- Copy the command

EC2 Instance Connect	Session Manager	SSH client	EC2 serial console
Instance ID			
<input checked="" type="checkbox"/> i-04d43de60b8c71345 (mylinux)			
1. Open an SSH client.			
2. Locate your private key file. The key used to launch this instance is key_aws_training_2022.pem			
3. Run this command, if necessary, to ensure your key is not publicly viewable.			
<input checked="" type="checkbox"/> chmod 400 key_aws_training_2022.pem			
4. Connect to your instance using its Public DNS:			
<input checked="" type="checkbox"/> ec2-13-127-25-8.ap-south-1.compute.amazonaws.com			
Example:			
 <input checked="" type="checkbox"/> Command copied	22.pem" ec2-user@ec2-13-127-25-8.ap-south-1.compute.amazonaws.com		
Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.			

- Open the command prompt – go to downloads and paste the command – if you get such error – its due to permission issues

- We can resolve this by using Putty or Git Bash

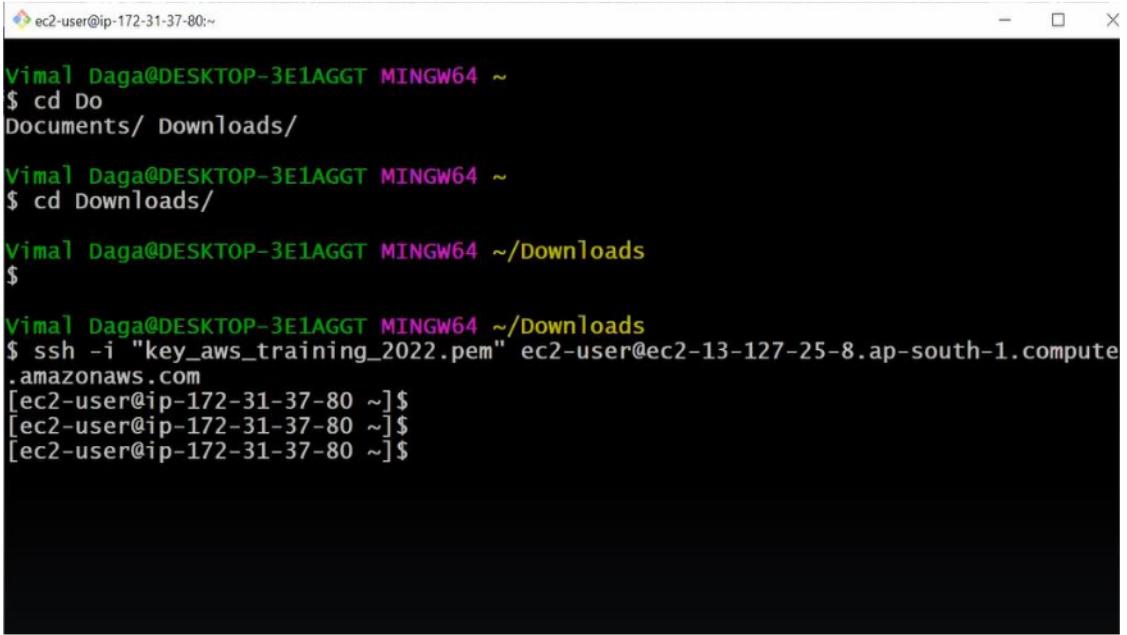


A screenshot of a terminal window, likely MINGW64, showing the command line interface. The user has navigated to the 'Downloads' directory:

```
Vimal Daga@DESKTOP-3E1AGGT MINGW64 ~  
$ cd Do  
Documents/ Downloads/  
  
Vimal Daga@DESKTOP-3E1AGGT MINGW64 ~  
$ cd Downloads/  
  
Vimal Daga@DESKTOP-3E1AGGT MINGW64 ~/Downloads  
$
```

The terminal window has a context menu open over the text area. The menu items include 'Open', 'Copy', 'Paste' (which is highlighted with a blue selection bar), 'Select All', 'Save as Image', 'Search', 'Reset', 'Default Size', 'Scrollbar' (which is checked with a checked checkbox icon), 'Full Screen', 'Flip Screen', and 'Options...'. The background of the terminal window is dark.

- Finally logged in to the OS



```
Vimal Daga@DESKTOP-3E1AGGT MINGW64 ~
$ cd Do
Documents/ Downloads/
Vimal Daga@DESKTOP-3E1AGGT MINGW64 ~
$ cd Downloads/
Vimal Daga@DESKTOP-3E1AGGT MINGW64 ~/Downloads
$ ssh -i "key_aws_training_2022.pem" ec2-user@ec2-13-127-25-8.ap-south-1.compute.amazonaws.com
[ec2-user@ip-172-31-37-80 ~]$
[ec2-user@ip-172-31-37-80 ~]$
[ec2-user@ip-172-31-37-80 ~]$
```

- Login to the root account

```
[ec2-user@ip-172-31-37-80 ~]$
[ec2-user@ip-172-31-37-80 ~]$
[ec2-user@ip-172-31-37-80 ~]$ sudo su -
root@ip-172-31-37-80 ~]#
[root@ip-172-31-37-80 ~]#
[root@ip-172-31-37-80 ~]# whoami
root
[root@ip-172-31-37-80 ~]#
```

- When we launch RedHat OS on AWS Cloud – yum is pre-configured

```
[root@ip-172-31-37-80 ~]# yum install httpd
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

Red Hat Enterprise Linux 8 for x86_64 - AppStre 48 MB/s | 46 MB    00:00
Red Hat Enterprise Linux 8 for x86_64 - BaseOS  69 MB/s | 52 MB    00:00
```

- Go into the configuration file and create a webpage

```
[root@ip-172-31-37-80 ~]#  
[root@ip-172-31-37-80 ~]#  
[root@ip-172-31-37-80 ~]# cd /var/www/html/  
[root@ip-172-31-37-80 html]# ls  
[root@ip-172-31-37-80 html]# cat > index.html  
i m vimal  
[root@ip-172-31-37-80 html]# ls  
index.html
```

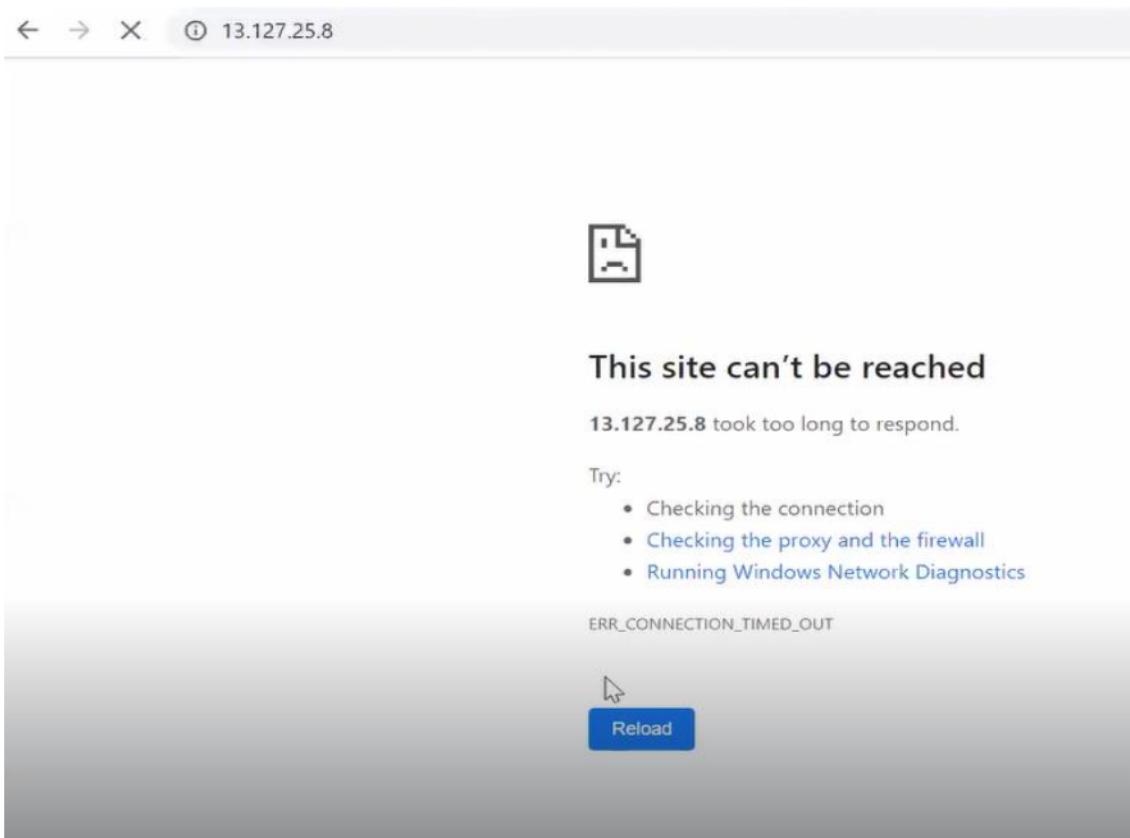
- Start the service

```
[root@ip-172-31-37-80 html]# systemctl start httpd  
[root@ip-172-31-37-80 html]# systemctl status httpd  
● httpd.service - The Apache HTTP Server  
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor pres  
  Active: active (running) since Sun 2022-10-16 08:53:28 UTC; 6s ago  
    Docs: man:httpd.service(8)  
   Main PID: 13183 (httpd)  
     Status: "Started, listening on: port 80"  
       Tasks: 213 (limit: 4700)  
      Memory: 25.8M  
        CGrou: /system.slice/httpd.service  
              └─13183 /usr/sbin/httpd -DFOREGROUND  
                  ├─13184 /usr/sbin/httpd -DFOREGROUND  
                  ├─13185 /usr/sbin/httpd -DFOREGROUND  
                  ├─13186 /usr/sbin/httpd -DFOREGROUND  
                  └─13187 /usr/sbin/httpd -DFOREGROUND  
  
Oct 16 08:53:27 ip-172-31-37-80.ap-south-1.compute.internal systemd[1]: Starting The Apache  
Oct 16 08:53:28 ip-172-31-37-80.ap-south-1.compute.internal systemd[1]: Started The Apache  
Oct 16 08:53:28 ip-172-31-37-80.ap-south-1.compute.internal httpd[13183]: Server  
[root@ip-172-31-37-80 html]#  
[root@ip-172-31-37-80 html]#
```

- Firewall disabled – there is no software installed

```
[root@ip-172-31-37-80 html]#  
[root@ip-172-31-37-80 html]#  
[root@ip-172-31-37-80 html]# systemctl status firewalld  
Unit firewalld.service could not be found.  
[root@ip-172-31-37-80 html]# |
```

- But still not able to connect – this is because of internal firewall in cloud



- Click on security

Name	Env	Instance ID	Instance state	Availability Zone
docker os	-	i-091197b04e7a0ecee	Running	ap-south-1a
newdockercheckos	-	i-06b59c61fcfd8340e	Running	ap-south-1a
mylinux	-	i-04d43de60b8c71345	Running	ap-south-1a
os1public1a	-	i-0aba71bf2345c12b2	Stopped	ap-south-1a

Instance: i-04d43de60b8c71345 (mylinux)

Security

IAM Role: -

Owner ID: 033857261292

Launch time: Sun Oct 16 2022 14:18:20 GMT+0530 (India Standard Time)

- Click on security groups

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with navigation links like EC2 Dashboard, EC2 Global View, Events, Tags, Limits, and Instances (with sub-links for Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, and Dedicated Hosts). The main area displays a table of instances with columns for Name, Env, Instance ID, Instance state, and Availability Zone. One instance, 'mylinux', is selected and highlighted in blue. A modal dialog is open for this instance, showing its IAM Role (empty), Owner ID (033857261292), and Launch time (Sun Oct 16 2022 14:18:20 GMT+0530 (India Standard Time)). Below these details, it lists Security groups, which includes 'sg-0e82167e055104abb (launch-wizard-79)'.

- Click on Edit Inbound Rules

This screenshot shows the same EC2 Instances page as above, but the focus is on the 'Inbound rules' tab of the selected instance's details. At the top, it shows the Owner (033857261292) and rule counts (1 Permission entry for both Inbound and Outbound). The 'Inbound rules' tab is active, showing a table with one rule. The rule details are: Name (empty), Security group rule (sgr-0aad7f18387e60b12), IP version (IPv4), Type (SSH), and Protocol (TCP).

- Add a rule

This screenshot shows the 'Edit inbound rules' page for the security group 'sg-0e82167e055104abb'. The URL in the browser bar is 'EC2 > Security Groups > sg-0e82167e055104abb - launch-wizard-79 > Edit inbound rules'. The page has a header 'Edit inbound rules' with a 'Info' link. Below the header, a note says 'Inbound rules control the incoming traffic that's allowed to reach the instance.' A message states 'This security group has no inbound rules.' At the bottom, there are three buttons: 'Cancel', 'Preview changes', and 'Save rules'. A large 'Add rule' button is located at the bottom left.

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EC2 Security Groups sg-0e82167e055104abb - launch-wizard-79 Edit inbound rules

Edit inbound rule

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID: -

Type: Info

Protocol: Info

Port range: Info

Source: Info

Description - optional: Info

Protocol: TCP

Port range: 0

Source: Custom

Add rule

Cancel Preview changes Save rules



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EC2 Security Groups sg-0e82167e055104abb - launch-wizard-79 Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID: -

Type: Info

Protocol: Info

Port range: Info

Source: Info

Description - optional: Info

Protocol: TCP

Port range: 0

Source: Custom

Add rule

Cancel Preview changes Save rules



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EC2 New EC2 Experience Tell us what you think X

EC2 Dashboard

EC2 Global View

Events

Tags

Limits

Instances

Instances New

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances Now

Inbound security group rules successfully modified on security group (sg-0e82167e055104abb | launch-wizard-79)

Details

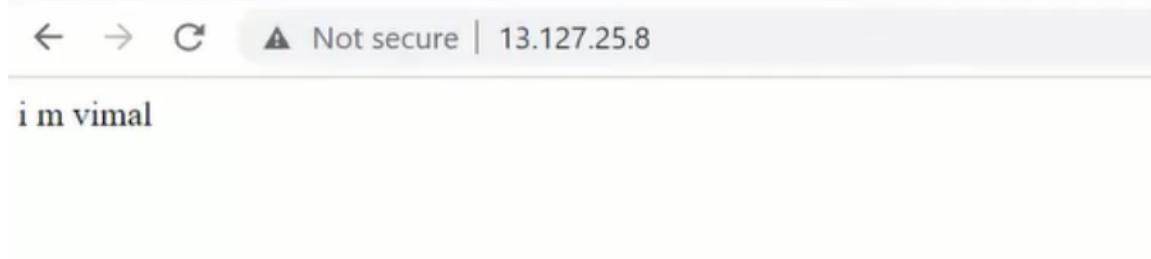
EC2 > Security Groups > sg-0e82167e055104abb - launch-wizard-79

sg-0e82167e055104abb - launch-wizard-79 Actions

Details

Security group name: launch-wizard-79	Security group ID: sg-0e82167e055104abb	Description: launch-wizard-79 created 2022-10-16T08:47:21.081Z	VPC ID: vpc-0ea80b068aa0ee6db
Owner: 033857261292	Inbound rules count: 1 Permission entry	Outbound rules count: 1 Permission entry	

- By using the public IP anyone can access the webpage



- Command to check the configuration file of the Apache HTTPD Webserver

```
[root@localhost ~]# rpm -q httpd
httpd-2.4.51-7.el9_0.x86_64
[root@localhost ~]# rpm -q -c httpd
/etc/httpd/conf.d/autoindex.conf
/etc/httpd/conf.d/userdir.conf
/etc/httpd/conf.d/welcome.conf
/etc/httpd/conf.modules.d/00-base.conf
/etc/httpd/conf.modules.d/00-dav.conf
/etc/httpd/conf.modules.d/00-mpm.conf
/etc/httpd/conf.modules.d/00-optional.conf
/etc/httpd/conf.modules.d/00-proxy.conf
/etc/httpd/conf.modules.d/00-systemd.conf
/etc/httpd/conf.modules.d/01-cgi.conf
/etc/httpd/conf/httpd.conf
/etc/httpd/conf/magic
/etc/logrotate.d/httpd
/etc/httpd/conf.d/htaccess.conf
```

- Command to open the configuration file

```
[root@localhost ~]# vim /etc/httpd/conf/httpd.conf
```

- The Webserver running on Port Number 80

```
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts. See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
Listen 80

#
# Dynamic Shared Object (DSO) Support
#
# To be able to use the functionality of a module which was built as a DSO you
# have to place corresponding 'LoadModule' lines at this location so the
# directives contained in it are actually available _before_ they are used.
# Statically compiled modules (those listed by 'httpd -l') do not need
# to be loaded here.
#
# Example:
# LoadModule foo_module modules/mod_foo.so
#
Include conf.modules.d/*.conf

#
# If you wish httpd to run as a different user or group, you must run
```

- To change the Port Number to 81- this change has been done on hard disk

```
root@localhost:~ — vim /etc/httpd/conf/httpd.conf
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts. See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
Listen 81

#
# Dynamic Shared Object (DSO) Support
#
# To be able to use the functionality of a module which was built as a DSO you
# have to place corresponding 'LoadModule' lines at this location so the
# directives contained in it are actually available _before_ they are used.
# Statically compiled modules (those listed by 'httpd -l') do not need
# to be loaded here.
#
# Example:
# LoadModule foo_module modules/mod_foo.so
#
Include conf.modules.d/*.conf
#
# If you wish httpd to run as a different user or group, you must run
```

- Command to check the port number –

```
[root@localhost ~]# netstat -tnlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
PID/Program name
tcp        0      0 0.0.0.0:111              0.0.0.0:*            LISTEN
1/systemd
tcp        0      0 0.0.0.0:22               0.0.0.0:*            LISTEN
816/sshd: /usr/sbin
tcp        0      0 127.0.0.1:631             0.0.0.0:*            LISTEN
813/cupsd
tcp6       0      0 :::111                 ::::*                LISTEN
1/systemd
tcp6       0      0 :::80                 ::::*                LISTEN
917/httpd
tcp6       0      0 :::22                 ::::*                LISTEN
816/sshd: /usr/sbin
tcp6       0      0 :::631                ::::*                LISTEN
813/cupsd
[root@localhost ~]#
```

- Command to reload the changes made – now the webserver working on port 81

```
[root@localhost ~]# systemctl reload httpd
[root@localhost ~]# netstat -tnlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
PID/Program name
tcp        0      0 0.0.0.0:111              0.0.0.0:*
1/systemd
tcp        0      0 0.0.0.0:22               0.0.0.0:*
316/sshd: /usr/sbin
tcp        0      0 127.0.0.1:631            0.0.0.0:*
313/cupsd
tcp6       0      0 :::1>1                :::*
1/systemd
tcp6       0      0 :::81                 :::*
917/httpd
tcp6       0      0 :::22                 :::*
316/sshd: /usr/sbin
tcp6       0      0 :::1:631              :::*
313/cupsd
[root@localhost ~]#
```

```
Command Prompt

C:\Users\Vimal Daga>curl http://192.168.1.2:81/index.html
<h2>my home page</h2>

C:\Users\Vimal Daga>curl http://192.168.1.2:80/index.html
curl: (7) Failed to connect to 192.168.1.2 port 80 after 2004 ms: Connection refused

C:\Users\Vimal Daga>
```



- If we change the port number out of range

```
root@localhost:~ — vim /etc/httpd/conf/httpd.conf

# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on a specific IP address, but note that if
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts. See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
# 2 bytes: 0-65535
Listen 70000

#
# Dynamic Shared Object (DSO) Support
#
# To be able to use the functionality of a module which was built as a DSO you
# have to place corresponding 'LoadModule' lines at this location so the
# directives contained in it are actually available _before_ they are used.
# Statically compiled modules (those listed by 'httpd -l') do not need
# to be loaded here.
#
```

```
[root@localhost ~]# systemctl reload httpd
Job for httpd.service failed.
See "systemctl status httpd.service" and "journalctl -xeu httpd.service" for details.
```

- Command to check if the service fails

```
[root@localhost ~]# journalctl -xeu httpd.service
```

```
as begun execution.

tpd[2791]: AH00526: Syntax error on line 48 of /etc/httpd/conf/httpd.conf:
tpd[2791]: Invalid address or port
stemd[1]: httpd.service: Control process exited, code=exited, status=1/FAILURE

port
hit httpd.service has exited.

d its exit status is 1.
stemd[1]: Reload failed for The Apache HTTP Server.
service has finished
```

- Two process cannot have same port no –

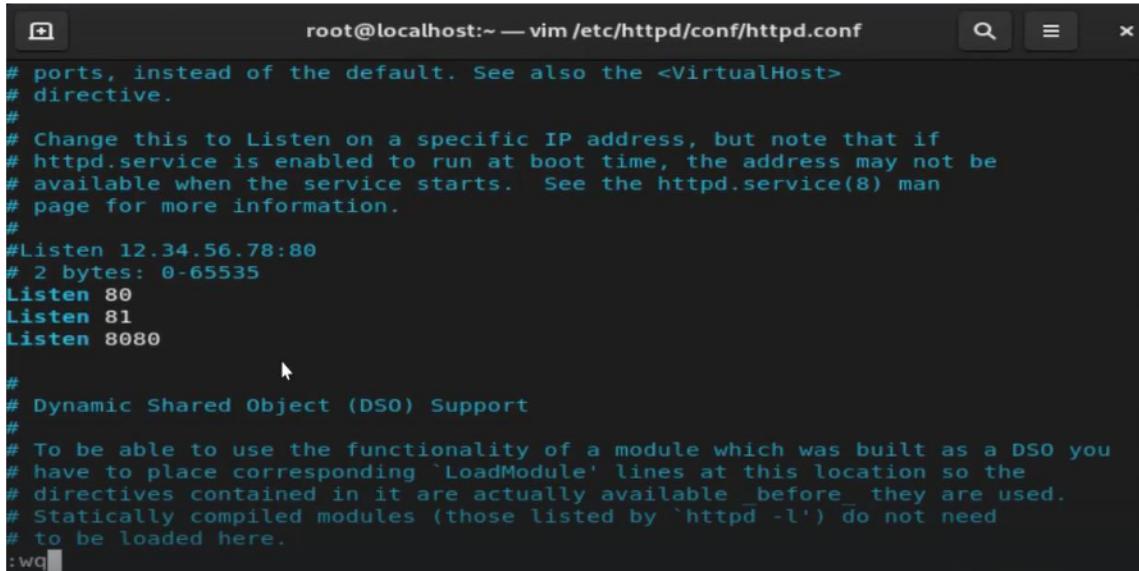
```
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on a specific IP address, but note that if
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts. See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
# 2 bytes: 0-65535
Listen 22

#
# Dynamic Shared Object (DSO) Support
#
# To be able to use the functionality of a module which was built as a DSO you
# have to place corresponding 'LoadModule' lines at this location so the
# directives contained in it are actually available _before_ they are used.
# Statically compiled modules (those listed by 'httpd -l') do not need
# to be loaded here.
#
# Example:
-- INSERT --
```

48,10 10%

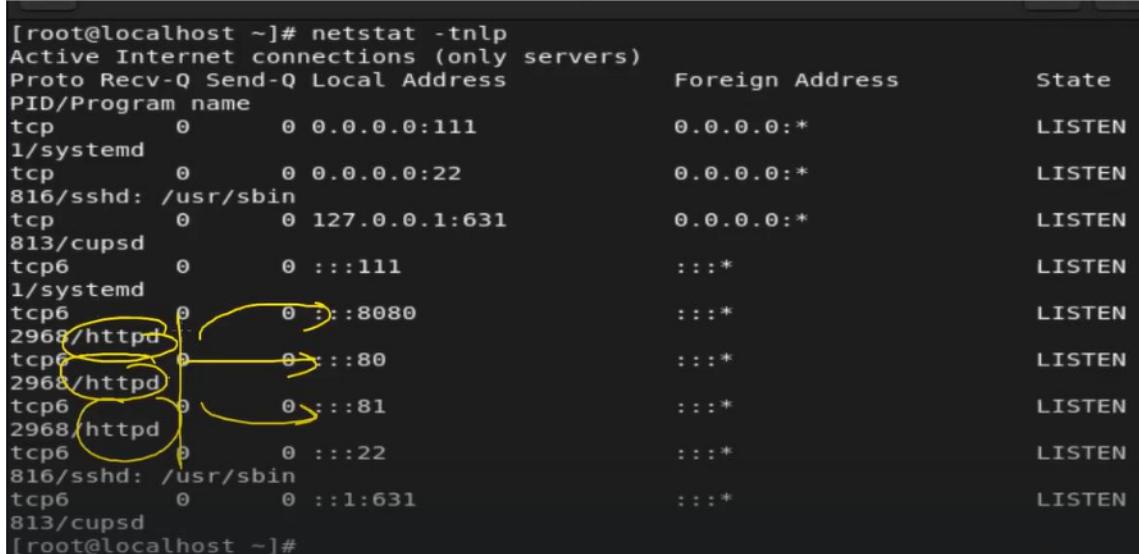
```
[root@localhost ~]# vim /etc/httpd/conf/httpd.conf
[root@localhost ~]# systemctl reload httpd
[root@localhost ~]# systemctl reload httpd
httpd.service is not active, cannot reload.
[root@localhost ~]# systemctl reload httpd
httpd.service is not active, cannot reload.
[root@localhost ~]# netstat -tnlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
PID/Program name
tcp      0      0 0.0.0.0:111              0.0.0.0:*
1/systemd
tcp      0      0 0.0.0.0:22              0.0.0.0:*
816/sshd: /usr/sbin
tcp      0      0 127.0.0.1:631            0.0.0.0:*
813/cupsd
tcp6     0      0 ::1:111                 ::*:*
1/systemd
tcp6     0      0 ::1:22                  ::*:*
816/sshd: /usr/sbin
tcp6     0      0 ::1:631                 ::*:*
813/cupsd
[root@localhost ~]#
```

- One process can have multiple port numbers



```
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on a specific IP address, but note that if
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts. See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
# 2 bytes: 0-65535
Listen 80
Listen 81
Listen 8080

#
# Dynamic Shared Object (DSO) Support
#
# To be able to use the functionality of a module which was built as a DSO you
# have to place corresponding 'LoadModule' lines at this location so the
# directives contained in it are actually available _before_ they are used.
# Statically compiled modules (those listed by 'httpd -l') do not need
# to be loaded here.
:wq
```



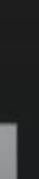
```
[root@localhost ~]# netstat -tnlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
PID/Program name
tcp      0      0 0.0.0.0:111              0.0.0.0:*
1/systemd
tcp      0      0 0.0.0.0:22              0.0.0.0:*
816/sshd: /usr/sbin
tcp      0      0 127.0.0.1:631            0.0.0.0:*
813/cupsd
tcp6     0      0 ::1:111                 ::*:*
1/systemd
tcp6     0      0 ::1:8080                ::*:*
2968/httpd
tcp6     0      0 ::1:80                  ::*:*
2968/httpd
tcp6     0      0 ::1:81                  ::*:*
2968/httpd
tcp6     0      0 ::1:22                  ::*:*
816/sshd: /usr/sbin
tcp6     0      0 ::1:631                 ::*:*
813/cupsd
[root@localhost ~]#
```

```
C:\Users\Vimal Daga>curl http://192.168.1.2:80/index.html
<h2>my home page</h2>

C:\Users\Vimal Daga>curl http://192.168.1.2:81/index.html
<h2>my home page</h2>  [REDACTED]

C:\Users\Vimal Daga>curl http://192.168.1.2:8080/index.html
<h2>my home page</h2>
```

- Command to list the port numbers supported by httpd

```
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# semanage port -l 
```

howl_port_t	tcp	5335	
howl_port_t	udp	5353	
hplip_port_t	tcp	1782, 2207, 2208, 8290, 8292, 9100, 9101	, 9102, 9220, 9221, 9222, 9280, 9281, 9282, 9290, 9291, 50000, 50002
http_cache_port_t	tcp	8080, 8118, 8123, 10001-10010	
http_cache_port_t	udp	3130	
http_port_t	tcp	80, 81, 443, 488, 8008, 8009, 8443, 9000	
i18n_input_port_t	tcp	9010	
ibm_dt_2_port_t	tcp	1792	
ibm_dt_2_port_t	udp	1792	
imaze_port_t	tcp	5323	
imaze_port_t	udp	5323	
inetd_child_port_t	tcp	1, 9, 13, 19, 512, 544, 891, 892, 5666	
inetd_child_port_t	udp	1, 9, 13, 19, 891, 892	
innd_port_t	tcp	119	
intermapper_port_t	tcp	8181	
interwise_port_t	tcp	7778	

- The tool to scan the network

```
[root@localhost ~]# yum whatprovides nmap
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can
register with an entitlement manager to register.

Repository 'dvd1' is missing name in configuration, using i
Repository 'dvd2' is missing name in configuration, using i
Last metadata expiration check: 0:32:20 ago on Sun 16 Oct 2
nmap-3:7.91-10.el9.x86_64 : Network exploration tool and se
Repo      : dvd2
Matched from:
Provide   : nmap = 3:7.91-10.el9

[root@localhost ~]# yum install nmap
```

- Command to check IP is alive

```
[root@localhost ~]# nmap 192.168.1.2
Starting Nmap 7.91 ( https://nmap.org ) at 2022-10-16 15:09
Nmap scan report for 192.168.1.2
Host is up (0.0000050s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
111/tcp   open  rpcbind
1234/tcp  open  hotline

Nmap done: 1 IP address (1 host up) scanned in 9.38 seconds
[root@localhost ~]# █
```

- Command to check the ports open

```
[root@localhost ~]# nmap -p 1234 192.168.1.2
Starting Nmap 7.91 ( https://nmap.org ) at 2022-10-16 15:11
Nmap scan report for 192.168.1.2
Host is up (0.000040s latency).

PORT      STATE SERVICE
1234/tcp  open  hotline

Nmap done: 1 IP address (1 host up) scanned in 6.70 seconds
[root@localhost ~]# █
```

- Command to perform version scanning-

```
[root@localhost ~]# nmap -p 1234 -sV 192.168.1.2
Starting Nmap 7.91 ( https://nmap.org ) at 2022-10-16 15:11
Nmap scan report for 192.168.1.2
Host is up (0.000042s latency).

PORT      STATE SERVICE VERSION
1234/tcp  open  http    Apache httpd/2.4.51 ((Red Hat Enterprise Linux))

Service detection performed. Please report any incorrect results at https://nmap.org/submit/
Nmap done: 1 IP address (1 host up) scanned in 13.33 seconds
[root@localhost ~]# █
```

- The document root of httpd – deploy the webpages in “/var/www/html”

```
root@localhost:~ — vim /etc/httpd/conf/httpd.conf
Require all denied
</Directory>
#
# Note that from this point forward you must specifically allow
# particular features to be enabled - so if something's not working as
# you might expect, make sure that you have specifically enabled it
# below.
#
#
# DocumentRoot: The directory out of which you will serve your
# documents. By default, all requests are taken from this directory, but
# symbolic links and aliases may be used to point to other locations.
#
DocumentRoot "/var/www/html"
#
# Relax access to content within /var/www.
#
<Directory "/var/www">
    AllowOverride None
-- INSERT --
126,10      32%
```

- The main configuration file of httpd is “/etc/httpd/conf/httpd.conf” – if any changes to be made – we can create a file with extension “.conf”

```
[root@localhost ~]# vim /etc/httpd/conf/httpd.conf
[root@localhost ~]# cd /etc/httpd/conf.d/
[root@localhost conf.d]# pwd
/etc/httpd/conf.d
[root@localhost conf.d]# ls
autoindex.conf README userdir.conf welcome.conf
[root@localhost conf.d]# pwd
/etc/httpd/conf.d
[root@localhost conf.d]# vim vimal.conf
```

```
root@localhost:/etc/httpd/conf.d — vim vimal.conf
Listen 8080
```

```
[root@localhost conf.d]# systemctl reload httpd
[root@localhost conf.d]# netstat -tnlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
PID/Program name
tcp      0      0 0.0.0.0:111              0.0.0.0:*
1/systemd
tcp      0      0 0.0.0.0:22               0.0.0.0:*
816/sshd: /usr/sbin
tcp      0      0 127.0.0.1:631             0.0.0.0:*
813/cupsd
tcp6     0      0 ::1:111                  ::*:*
1/systemd
tcp6     0      0 ::1:8080                 ::*:*
3580/httpd
tcp6     0      0 ::1:80                  ::*:*
3580/httpd
tcp6     0      0 ::1:22                  ::*:*
816/sshd: /usr/sbin
tcp6     0      0 ::1:631                 ::*:*
813/cupsd
[root@localhost conf.d]#
```

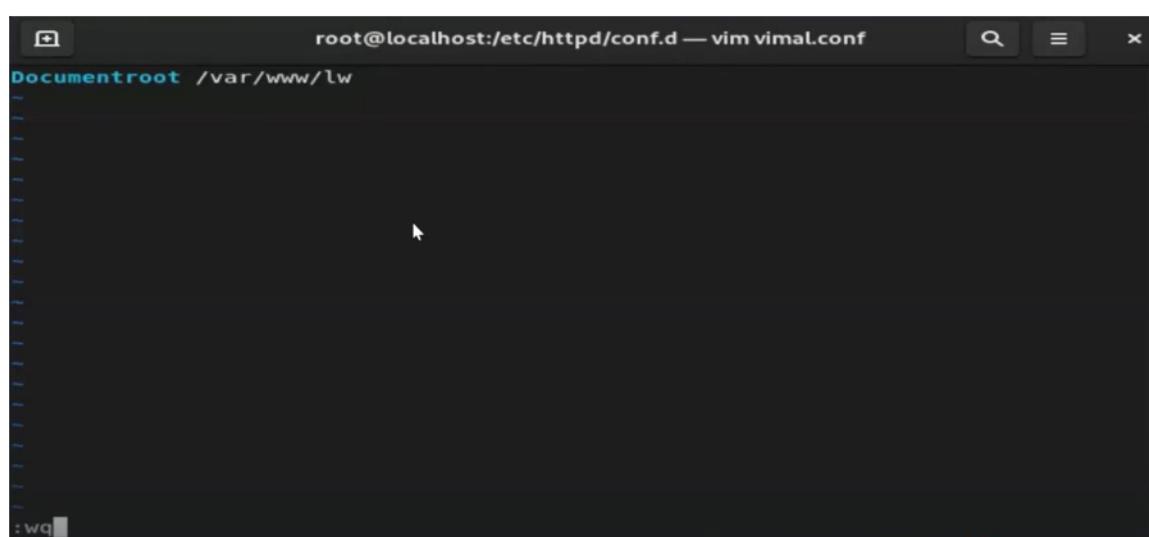
- Command to go back to the previous folder

```
[root@localhost lw]# cd -  
/etc/httpd/conf.d
```

- To change the document root – first we have to create the folder

```
[root@localhost conf.d]# mkdir /var/www/lw
[root@localhost conf.d]# cd /var/www/lw
[root@localhost lw]# ls
[root@localhost lw]# █
```

```
[root@localhost conf.d]# vim vimal.conf
```



- Host a webpage –

```
[root@localhost html]# cd /var/www/lw/
[root@localhost lw]# ls
[root@localhost lw]# cat > index.html
new location ...
[root@localhost lw]# ls
index.html
[root@localhost lw]# pwd
/var/www/lw
[root@localhost lw]# █
```

- When the client hits the server – the server records all the information of client –

```
[root@localhost conf.d]# cd /var/log/
[root@localhost log]# ls
anaconda      dnf.librepo.log    maillog      secure-20221016
audit         dnf.log          maillog-20221016 speech-dispatcher
boot.log       dnf.rpm.log     messages      spooler
boot.log-20221015 firewalld      messages-20221016 spooler-20221016
boot.log-20221016 gdm          private      sssd
btmp          hawkey.log      qemu-ga      tallylog
chrony        hawkey.log-20221016 README      wtmp
cron          httpd           rhsm
cron-20221016 insights-client samba
cups          lastlog         secure
```

```
[root@localhost log]# cd httpd/
[root@localhost httpd]# pwd
/var/log/httpd
[root@localhost httpd]# ls
access_log  error_log
[root@localhost httpd]# vim error_log
```

```
[Sun Oct 16 14:53:22.414208 2022] [mpm_event:notice] [pid 2968:tid 2968] AH00489
: Apache/2.4.51 (Red Hat Enterprise Linux) configured -- resuming normal operations
[Sun Oct 16 14:53:22.414225 2022] [core:notice] [pid 2968:tid 2968] AH00094: Command line: '/usr/sbin/httpd -D FOREGROUND'
[Sun Oct 16 14:55:56.496213 2022] [mpm_event:notice] [pid 2968:tid 2968] AH00493
: SIGUSR1 received. Doing graceful restart
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using localhost.localdomain. Set the 'ServerName' directive globally to suppress this message
(13)Permission denied: AH00072: make_sock: could not bind to address [::]:1234
(13)Permission denied: AH00072: make_sock: could not bind to address 0.0.0.0:1234
[Sun Oct 16 14:55:56.573816 2022] [mpm_event:alert] [pid 2968:tid 2968] no listening sockets available, shutting down
[Sun Oct 16 14:55:56.573822 2022] [:emerg] [pid 2968:tid 2968] AH00019: Unable to open logs, exiting
[Sun Oct 16 15:01:24.651830 2022] [core:notice] [pid 3580:tid 3580] SELinux policy enabled; httpd running as context system_u:system_r:httpd_t:s0
[Sun Oct 16 15:01:24.653392 2022] [suexec:notice] [pid 3580:tid 3580] AH01232: suEXEC mechanism enabled (wrapper: /usr/sbin/suexec)
--o--
```

58,1

61%

```
[root@localhost httpd]#
[root@localhost httpd]# pwd
/var/log/httpd
[root@localhost httpd]# ls
access_log  error_log
[root@localhost httpd]# cat access_log
```

```
192.168.1.12 - - [16/Oct/2022:15:37:43 +0530] "GET /index.html HTTP/1.1" 404 196
"-" "curl/7.83.1"
192.168.1.12 - - [16/Oct/2022:15:38:15 +0530] "GET /index.html HTTP/1.1" 200 17
"-" "curl/7.83.1"
192.168.1.12 - - [16/Oct/2022:15:41:26 +0530] "GET /vimal.html HTTP/1.1" 200 6
"-" "curl/7.83.1"
192.168.1.12 - - [16/Oct/2022:15:41:31 +0530] "GET / HTTP/1.1" 200 17 "-" "curl/
7.83.1"
192.168.1.12 - - [16/Oct/2022:15:41:36 +0530] "GET / HTTP/1.1" 200 17 "-" "curl/
7.83.1"
192.168.1.12 - - [16/Oct/2022:15:41:39 +0530] "GET /vimal.html HTTP/1.1" 200 6
"-" "curl/7.83.1"
192.168.1.12 - - [16/Oct/2022:15:43:24 +0530] "GET /vimal.html HTTP/1.1" 200 6
"-" "curl/7.83.1"
192.168.1.12 - - [16/Oct/2022:15:43:26 +0530] "GET / HTTP/1.1" 200 6 "-" "curl/7
.83.1"
192.168.1.12 - - [16/Oct/2022:15:43:33 +0530] "GET / HTTP/1.1" 200 6 "-" "curl/7
.83.1"
192.168.1.12 - - [16/Oct/2022:15:43:39 +0530] "GET /index.html HTTP/1.1" 200 17
"-" "curl/7.83.1"
[root@localhost httpd]#
[root@localhost httpd]#
```