

Docker port

Lec-29 → Docker Port Expose

```
→ Login into AWS account. Create One Linux instance
Now go to putty → login as → EC2-user

→ Sudo su
→ yum update -y
→ yum install docker -y
→ Service docker start

→ docker run -td --name techserver -p 80:80 ubuntu
→ docker ps
→ docker port techserver
O/P → 80/TCP → 0.0.0.0/80

→ docker exec -it techserver /bin/bash
→ apt-get update
→ apt-get install apache2 -y
```

Difference between docker attach and docker exec?

Docker exec Creates a new process in the Container's environment while docker attach just Connect the Standard Input/Output of the main process inside the Container to Corresponding Standard input/output error of Current terminal.

docker exec is Specifically for running new things in a already started Container be it a Shell or Some Other process

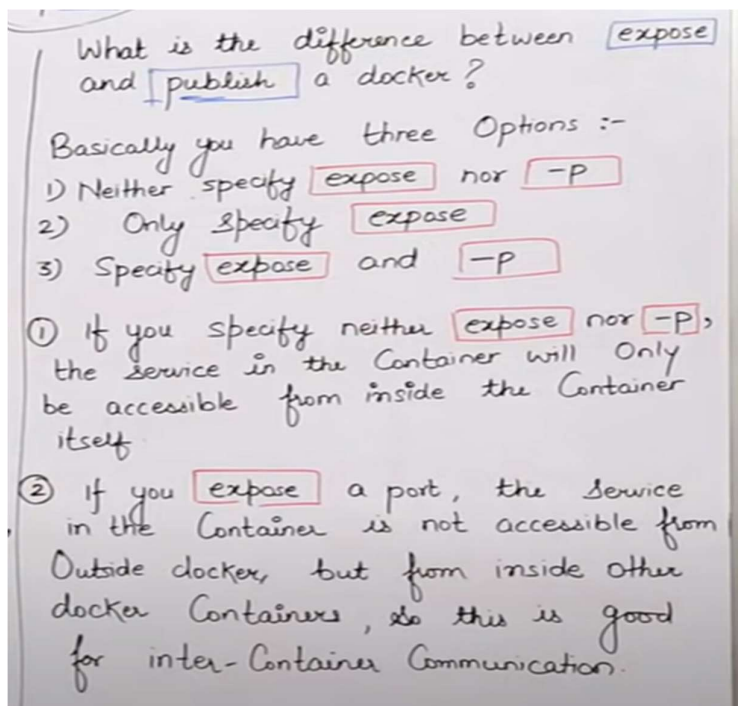
pid → process id
ppid → parent process id

- Docker exec ka matlab hai expose karna, agar mein koi purana kaam apne terminal par kar rah ahu aur mujhe urgently kisi new kaam ko karne ke liye naya terminal chahiye toh uske liye hum exec command use karte hai
- Docker exec ka matlab hai ki agar mera koi container ka terminal chal raha aur hum chahate hai ki usi container ka naya terminal khul jaye toh vaha hum exec command use karte hai .

expose = (expose matlab exec) Agar mene expose command chalayi toh humara port open toh ho jayega but publically kisi ko nahi pata chalega mera matlab host machine ke andar jitane bhi container hai vo aapas mein communicate kar sakte hai but agar koi banda internet ke madyam se aaye aur humare container data dekhna chahe toh vo dekh nahi sakta.

Public = (public means -p) public command hum tab use karte hai jab hum ye chahate hai humare container ka data koi bhi dekh sake vo publically accessible ko koi bhi internet user dekh sakta ho tab hum use karte hai public

- Agar mene na **expose** chalaya na hi mene **public** chalaya toh uske liye mujhe data dekhane ke liye har ek container ke andar jaake tab uska data dekhna padega vo host machine ke andar jo bhi container honge unse bhi vo communicate nahi kar paa raha hoga .s



- Agar mene container mein expose aur public dono command use kar liya toh uske liye toh hum docker ke bahar yani kahi se bhi hum container ke data ko access kar sakte hai kyu ki uske port khul gaye hai ab .

③ If you **expose** and **-p** a port, the service in the Container is accessible from anywhere, even Outside docker.

- Agar mene **expose** nahi kiya kewal **public** command use kiya toh humare sab port khul jayenge koi kahi se bhi humare container ka data access kar sakta hai humein jaruri nahi tab ki hum expose command chalaye. Humare host machine ke in jitane container hai wo bhi aaaps mein communicate kar payenge jaruri nahi phir ki expose chalaye.

If you do **-p** but do not **expose** docker does an **implicit expose**. This is because, if a port is Open to the public, it is automatically also open to the other docker Containers. Hence **-p** includes **expose**.

docker run -td --name Allahabad -p 80:80 ubuntu

- ➔ Yaha mene td isliye likha hai container ko banaye or run kare but run karane ke in baad mujhe container ke in andar na le jaye container run ho jaye aur mein container ke in bahar rahu, aap dekh sakte ho container bana gaya aur run bhi hogaya but mein container ke in bahar hu.
- ➔ --name Allahabad mene apne container ka name diya hai
- ➔ -p 80:80 **-p matlab port** iska matlab **host** ke in port number 80 ko aap **container** ke in port number 80 ke in sath connect kar dijiye aur vahi connection ko hum maping kehate hai.
- ➔ Hum host machine mein koi bhi port define kar sakte hai, but hum container ke in andar by default 80 port hi rakahate hai usko change nahi karate.

```
[root@ip-172-31-9-190 ec2-user]# docker run -td --name allahabad -p 80:80 ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
7b1a6ab2e44d: Pull complete
Digest: sha256:626ffe58f6e7566e00254b638eb7e0f3b11d4da9675088f4781a50ae288f3322
Status: Downloaded newer image for ubuntu:latest
93c3c130bf1fd331d1ebbe820aa067d08582b76630c01cf9f73493418606c9a7
[root@ip-172-31-9-190 ec2-user]#
```

→ Hum dekhenge humara port map ho gaya yaha aur humare host machine ka port number 80 bhi humare is container kein port number 80 sein map ho gaya hai .

```
[root@ip-172-31-9-190 ec2-user]# docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
93c3c130bf1f	ubuntu	"bash"	13 seconds ago	Up 12 seconds	0.0.0.0:80->80/tcp, :::80->80/tcp	allahabad

```
[root@ip-172-31-9-190 ec2-user]#
```

→ Agar humko apana port number check karna ho toh is COMMAND sein kar sakte hai .

```
[root@ip-172-31-9-190 ec2-user]# docker port allahabad
```

80/tcp -> 0.0.0.0:80
80/tcp -> :::80

```
[root@ip-172-31-9-190 ec2-user]#
```

→ docker exec -it Allahabad / bin/bash

ye command hum container kein andar ghusane kein liye use karte hai aur **exec** ka matlab hai ki ye eak naya process start kardeta hai neech hum isko aur achee sein padhenge .

```
[root@ip-172-31-9-190 ec2-user]# docker exec -it allahabad /bin/bash
```

```
root@93c3c130bf1f:/#
```

→ apt-get update

agar humko ubuntu machine par motlab Ubuntu container ko update karna hai toh hum **apt-get update** command use karte hai .


```

root@93c3c130bf1f:/# apt-get update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1232 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1689 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1096 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [738 kB]
Get:13 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [30.1 kB]
Get:14 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [807 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [33.3 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [2668 B]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [7182 B]
Get:18 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [682 kB]
Fetched 19.7 MB in 4s (5192 kB/s)
Reading package lists... Done
root@93c3c130bf1f:/#

```

→ apt-get install apache2 -y

mene apne ubuntu machine mein apache2 we server kein packages ko install kar diya jisase agar mujhe kisi webpage ko run karna ho toh hum kar sake aage dekhnege kaise webpage ko port se connect karke net par dalenge.

```

root@93c3c130bf1f:/# apt-get install apache2 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libasn1-8-heimdal libbrotli1 libcurl4 libexpat1 libgdbm-compat4 libgdbm6
  libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal libicu66 libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3
  libkrb5support0 libldap-2.4-2 libldap-common liblua5.2-0 libmagic-mgc libmagic1 libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1 libsass12-2 libsass2-modules libsass2-modules-db libsasl2-0
  libssh-4 libssl1.1 libwind0-heimdal libxml2 mime-support netbase openssl perl perl-modules-5.30 publicsuffix ssl-cert tzdata xz-utils
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser ufw gdbm-l10n krb5-doc krb5-user libsass2-modules-gssapi-mit | libsass2-modules-gssapi-heimdal libsass2-modules-ldap
  libsass2-modules-otp libsass2-modules-sql perl doc libterm readline gnu perl | libterm readline perl perl make libb debug perl liblocale codes perl openssl blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libasn1-8-heimdal libbrotli1 libcurl4 libexpat1 libgdbm-compat4
  libgdbm6 libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal libicu66 libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3
  libkrb5support0 libldap-2.4-2 libldap-common liblua5.2-0 libmagic-mgc libmagic1 libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1 libsass12-2 libsass2-modules libsass2-modules-db libsasl2-0
  libssh-4 libssl1.1 libwind0-heimdal libxml2 mime-support netbase openssl perl perl-modules-5.30 publicsuffix ssl-cert tzdata xz-utils
0 upgraded, 57 newly installed, 0 to remove and 0 not upgraded.
Need to get 24.1 MB of archives.
After this operation, 117 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 perl-modules-5.30 all 5.30.0-9ubuntu0.2 [2738 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm6 amd64 1.18.1-5 [27.4 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm-compat4 amd64 1.18.1-5 [6244 B]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libperl5.30 amd64 5.30.0-9ubuntu0.2 [3952 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 perl amd64 5.30.0-9ubuntu0.2 [224 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64 1.6.5-1ubuntu1 [91.4 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 libexpat1 amd64 2.2.9-1build1 [73.3 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libssl1.1 amd64 1.1.1f-1ubuntu2.8 [1320 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2 [84.7 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libsasl2-modules libsass2-modules-db amd64 3.31.1-4ubuntu0.2 [549 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2 [10.5 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/main amd64 libroken18-heimdal amd64 7.7.0+dfsg-1ubuntu1 [41.8 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal/main amd64 libasn1-8-heimdal amd64 7.7.0+dfsg-1ubuntu1 [181 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal/main amd64 libheimbase1-heimdal amd64 7.7.0+dfsg-1ubuntu1 [29.7 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal/main amd64 libhcrypto4-heimdal amd64 7.7.0+dfsg-1ubuntu1 [87.9 kB]
Please select the geographic area in which you live. Subsequent configuration questions will narrow this down by presenting a list of cities, representing the time zones in which they are located.
 1. Africa 2. America 3. Antarctica 4. Australia 5. Arctic 6. Asia 7. Atlantic 8. Europe 9. Indian 10. Pacific 11. SystemV 12. US 13. Etc
Geographic area: 9

```

→ cd /var/www/html

hum apne Ubuntu host machine kein root directory kein andar iss directory par jayenge aur yein by default bana hota hai , aur hum html directory kein andar jaake ek **index.html file** banayenge phir hum us html file kein andar kuch likhenege aur use save kar denge .

→ echo "hello satyam how are you"> index.html

mene echo command isliye likha hai ki hum index.html file mein likhenege aur usko push kar denge hum index.html file kein andar.

→ Service apache2 start

Yaha mene apne apache server2 jo install kiya thaa usko start kar diya hai

- Phir mene ejo index.html page banaya thaa usko agar humein apne browser par dekhana hai toh uske liye hum apne host machine ki ip apne browser par dalenge toh vo humko dikha dega .aur nahi toh hum apne ip kein last mein :80 laga denge kyu ki mera port vahi hai



→ Our container

```
[root@ip-172-31-9-190 ec2-user]# docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
93c3c130bf1f	ubuntu	"bash"	4 days ago	Up 4 days	0.0.0.0:80->80/tcp, :::80->80/tcp	allahabad

- Mene phir eak Jenkins ka container banaya hai aur uske andar mene ports 8080 jenkins ko de diya hai matlab humare port par 8080 par jo bhi aayega usko Jenkins ki cheeje dikhyenge

```
[root@ip-172-31-9-190 ec2-user]# docker run -p 8080:8080 --name=jenkins-master -d jenkins/jenkins
Unable to find image 'jenkins/jenkins:latest' locally
latest: Pulling from jenkins/jenkins
bb7d5a84853b: Pull complete
2af6c503b513: Pull complete
8e25d0cf1080: Pull complete
0240c3db9ded: Pull complete
104b0fbbaa318: Pull complete
247d666c021d: Pull complete
6223d890a3bb: Pull complete
2f7cd33e7e6d: Pull complete
4cdd12619cf5: Pull complete
75a7f74f397d: Pull complete
ecbc845de099: Pull complete
6c74fb97f842: Pull complete
68594bbd60f0: Pull complete
bde305f9ef3a: Pull complete
83430830fab4: Pull complete
20013e5ac162: Pull complete
523d42ef5fffd: Pull complete
Digest: sha256:d63d4325682f98dbf7b6cd2b27f1c1f509f7d5d3b62d8045a06a79f1d6910f5e
Status: Downloaded newer image for jenkins/jenkins:latest
c4fbaaf4f3176c0474505876bd993b7b99eee6c177971bf40f7337f860a66eaa
[root@ip-172-31-9-190 ec2-user]#
```

```
[root@ip-172-31-9-190 ec2-user]# docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
c4fbaaf4f317	jenkins/jenkins	"/sbin/tini -- /usr/..."	6 minutes ago	Up 6 minutes	0.0.0.0:8080->8080/tcp, :::8080->8080/tcp, 50000/tcp	jenkins-master
93c3c130bf1f	ubuntu	"bash"	4 days ago	Up 4 days	0.0.0.0:80->80/tcp, :::80->80/tcp	allahabad

```
[root@ip-172-31-9-190 ec2-user]#
```

➔ Hum apne host machine mein jayenge aur inbound rule mein port 8080 ko allow kar denge jisase humara container ka port 8080 aur humare host machine ka port 8080 map ho jayega.

The screenshot shows the AWS Management Console interface for editing inbound rules of a security group. The 'Inbound rules' section is highlighted with a red circle. A new rule is being added with the following details:

Security group rule ID	Type	Protocol	Port range	Source	Description - optional	Actions
sgr-02214b760525fbb6c	SSH	TCP	22	Custom		Delete
sgr-0e962afaa5edf7c7d	HTTP	TCP	80	Custom		Delete
sgr-0644d9ea214a26268	Custom TCP	TCP	8080	0.0.0.0/0		Delete
sgr-061d99aebb0b68153	HTTPS	TCP	443	Custom		Delete
sgr-0aa2f97ce6d4ecb97	HTTP	TCP	80	Custom		Delete

➔ Phir mein jab mein apne **ip** ko browser par dalunga aur last mein :8080 laga dunga toh vo mere Jenkins vale page par lete jayega

➔ **http://13.232.8.74:8080/**

The screenshot shows the Jenkins 'Getting Started' page. The page title is 'Unlock Jenkins'. It instructs the user to copy the initial administrator password from the log or the server file `/var/jenkins_home/secrets/initialAdminPassword`. A text input field for the password is visible.

➔ agar hum container ko stop ya phir delete kar dete hai toh humare sab port unmap ho jate hai, phir host aur container kein beech mein koi vasta nahi rehata .

