

How to run Pchain with Ubuntu

1. Ubuntu configuration

1) install go

```
wget https://dl.google.com/go/gol.11.4.linux-amd64.tar.gz
```

```
ubuntu@ip-172-31-12-155:~$ wget https://dl.google.com/go/gol.11.4.linux-amd64.tar.gz
--2019-01-10 10:01:23-- https://dl.google.com/go/gol.11.4.linux-amd64.tar.gz
Resolving dl.google.com (dl.google.com)... 172.217.0.46, 2607:f8b0:4005:809::200e
Connecting to dl.google.com (dl.google.com)|172.217.0.46|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 126643341 (121M) [application/octet-stream]
Saving to: 'gol.11.4.linux-amd64.tar.gz'

gol.11.4.linux-amd64.tar.gz 100%[=====] 120.78M 53.7MB/s in 2.2s
2019-01-10 10:01:26 (53.7 MB/s) - 'gol.11.4.linux-amd64.tar.gz' saved [126643341/126643341]
```

```
sudo tar -xzf gol.10.4.linux-amd64.tar.gz -C /usr/local
```

```
sudo ln -s /usr/local/go/bin/ /usr/bin/
```

```
ubuntu@ip-172-31-12-155:~$ sudo tar -xzf gol.11.4.linux-amd64.tar.gz -C /usr/local
ubuntu@ip-172-31-12-155:~$ sudo ln -s /usr/local/go/bin/ /usr/bin/
```

2) mkdir -p \$HOME/go-workspace/src

```
mkdir -p $HOME/go-workspace/pkg
```

```
mkdir -p $HOME/go-workspace/bin
```

3) Config go

```
sudo vim $HOME/.bashrc
```

insert in the bottom

```
export GOROOT=/usr/local/go
```

```
export GOPATH=$HOME/go-workspace
```

```
export PATH=$PATH:$GOROOT/bin:$GOPATH/bin
```

Press Esc, :wq save and exit. Make sure the file takes effect.

```
source $HOME/.bashrc
```

check go

1. go version

```
ubuntu@ip-172-31-12-155:~$ go version
go version go1.6.2 linux/amd64
```

2. go env

```

ubuntu@ip-172-31-12-155:~$ go version
go version go1.6.2 linux/amd64
ubuntu@ip-172-31-12-155:~$
ubuntu@ip-172-31-12-155:~$
ubuntu@ip-172-31-12-155:~$
ubuntu@ip-172-31-12-155:~$
ubuntu@ip-172-31-12-155:~$ go env
GOARCH="amd64"
GOBIN=""
GOEXE=""
GOHOSTARCH="amd64"
GOHOSTOS="linux"
GOOS="linux"
GOPATH="/home/ubuntu/go"
GORACE=""
GOROOT="/usr/lib/go-1.6"
GOTOOLDIR="/usr/lib/go-1.6/pkg/tool/linux_amd64"
GO15VENDOREXPERIMENT="1"
CC="gcc"
GOGCCFLAGS="-fPIC -m64 -pthread -fmessage-length=0"
CXX="g++"
CGO_ENABLED="1"
ubuntu@ip-172-31-12-155:~$ █

```

2、Install git

```

ubuntu@ip-172-31-12-155:~$ sudo apt-get install git
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-aws-headers-4.4.0-1066 linux-aws-headers-4.4.0-1069 linux-aws-headers-4.4.0-1070 linux-he
  linux-image-4.4.0-1066-aws linux-image-4.4.0-1069-aws linux-image-4.4.0-1070-aws
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk gitweb git-arch git-
The following NEW packages will be installed:
  git
0 upgraded, 1 newly installed, 0 to remove and 37 not upgraded.
Need to get 3,176 kB of archives.
After this operation, 24.1 MB of additional disk space will be used.
Get:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu xenial-updates/main amd64 git amd64 1:2.7.4-
Fetched 3,176 kB in 0s (60.4 MB/s)
Selecting previously unselected package git.
(Reading database ... 187261 files and directories currently installed.)
Preparing to unpack .../git_1%3a2.7.4-0ubuntu1.6_amd64.deb ...
Unpacking git (1:2.7.4-0ubuntu1.6) ...
Setting up git (1:2.7.4-0ubuntu1.6) ...
ubuntu@ip-172-31-12-155:~$ █

```

Check git version

```

ubuntu@ip-172-31-12-155:~$ git version
git version 2.7.4

```

3、Pchain download and edit

Create folders:

```
mkdir -p pchain/src/github.com/
```

```
mkdir pchain/bin/
```

Source Code

Notice: source has to be under current directory.

```
cd pchain/src/github.com/
```

```
git clone https://github.com/pchain-org/pchain.git
```

```
ubuntu@ip-172-31-12-155:~/pchain/src/github.com$ git clone https://github.com/pchain-org/pchain.git
Cloning into 'pchain'...
remote: Enumerating objects: 600, done.
remote: Counting objects: 100% (600/600), done.
remote: Compressing objects: 100% (418/418), done.
remote: Total 22812 (delta 327), reused 338 (delta 172), pack-reused 22212
Receiving objects: 100% (22812/22812), 56.29 MiB | 17.92 MiB/s, done.
Resolving deltas: 100% (13593/13593), done.
Checking connectivity... done.
```

Enter pchain directory:

```
ubuntu@ip-172-31-12-155:~$ cd pchain
ubuntu@ip-172-31-12-155:~/pchain$ ls
bin  src
```

cd pchain/src/github.com/pchain/restore/

vi build.sh

```
#!/bin/sh

set -e

PWD=`pwd`
echo $PWD
workspace=$PWD
pchaindir="$workspace/src/github.com/pchain"

GOPATH="$workspace"
export GOPATH
echo $GOPATH
cd "$pchaindir"
echo `pwd`
make build
#go build -i -v -o $workspace/bin/pchain ./cmd
```

Press Esc, :wq save and exit. Make sure the file takes effect.

Copy the build.sh script file to the pchain directory:

Command:

```
cp build.sh $HOME/pchain/
```

```
ubuntu@ip-172-31-12-155:~/pchain$ ls  
bin  build.sh  src
```

```
find . -name '*.sh' | xargs chmod +x
```

```
ubuntu@ip-172-31-12-155:~/pchain$ find . -name '*.sh' | xargs chmod +x  
ubuntu@ip-172-31-12-155:~/pchain$ ls  
bin  build.sh  src
```

Edit:

```
cd pchain
```

```
vim build.sh
```

Press Shift: config unix;

Input set ff=unix, Enter;

Press Esc, : wq save and exit.



```
./build.sh
```

After compile, you will find the binary executable file pchain under pchain/bin/

```
cd $HOME/pchain/bin/
```

```
sudo chmod +x pchain
```

1) Init the local account:

```
./pchain      --datadir      .pchain      init_eth_genesis
" {1000000000000000000000000, 100} "
```

```
ubuntu@ip-172-31-12-155:~/pchain/bin$ ./pchain --datadir .pchain init_eth_genesis "{10000000000000000000,100}"
INFO [01-10]10:28:45.879] this is init_eth_genesis
INFO [01-10]10:28:46.663] createPriValidators          account:=0x0388Eaa50925AfE3b43828ef853774e2b7E16f79  pwd:=pchain
ubuntu@ip-172-31-12-155:~/pchain/bin$
```

Check

```
ubuntu@ip-172-31-12-155:~/pchain/bin$ ll
total 36320
drwxrwxr-x 4 ubuntu ubuntu    4096 Jan 10 10:28 ./
drwxrwxr-x 4 ubuntu ubuntu    4096 Jan 10 10:21 ../
drwx----- 3 ubuntu ubuntu    4096 Jan 10 10:28 log/
-rwxrwxr-x 1 ubuntu ubuntu 37172776 Jan 10 10:24 pchain*
drwx----- 3 ubuntu ubuntu    4096 Jan 10 10:28 .pchain/
ubuntu@ip-172-31-12-155:~/pchain/bin$
```

2) Init the local pchain

```
./pchain --datadir .pchain
init .pchain/pchain/eth_genesis.json
```



```

ubuntu@ip-172-31-12-155:~/pchain/bin$ ./pchain --datadir .pchain init .pchain/pchain/eth_genesis.json
INFO [01-10|10:29:20.962] init_eth_blockchain 0 with dbPath: .pchain/pchain/eth/chaindata
INFO [01-10|10:29:20.962] Allocated cache and file handles      database=.pchain/pchain/eth/chaindata cache=16 handles=16
INFO [01-10|10:29:20.967] init_eth_blockchain 1
INFO [01-10|10:29:20.967] init_eth_blockchain 2
INFO [01-10|10:29:20.968] Writing custom genesis block
INFO [01-10|10:29:20.968] Persisted trie from memory database      nodes=1 size=270.00B time=31.931µs gcnodes=0 gcsizes=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [01-10|10:29:20.968] init_eth_blockchain end
INFO [01-10|10:29:20.968] Successfully wrote genesis block and/or chain rule set: b5155420a9b2cbb2fc9197e3ca9ef5a4d81206c5400d8a965481a3b06e82b8c8
INFO [01-10|10:29:20.968] Database closed                          database=.pchain/pchain/eth/chaindata
INFO [01-10|10:29:20.969] checkAccount(), coinbase is 0388eaa50925afe3b43828ef853774e2b7e16f79
INFO [01-10|10:29:20.969] checkAccount(), address is 0388eaa50925afe3b43828ef853774e2b7e16f79, balance is 10000000000000000000, amount is 100
ubuntu@ip-172-31-12-155:~/pchain/bin$

```

3) Run pchain

Copy run.sh under pchain directory then run ./run.sh

```
touch run.sh
```

```
sudo chmod +x run.sh
```

Mining mode: (Default add --mine)

```
#!/bin/bash
```

```

./pchain --datadir .pchain --networkid=10000 --
port=30201 --syncmode "full" --mine --rpc --rpcport

```

```
6969 --rpcaddr=0.0.0.0 --rpccorsdomain=* --mine --  
rpcapi  
"eth,web3,personal,net,admin,tdm,miner,personal,chain,tx  
pool" --verbosity=4 > pchain.log 2>&1 &
```

Non-mining mode:

```
#!/bin/bash
```

```
./pchain --datadir .pchain --networkid=10000 --  
port=30201 --syncmode "full" --rpc --rpcport 6969 --  
rpcaddr=0.0.0.0 --rpccorsdomain=* --rpcapi  
"eth,web3,personal,net,admin,tdm,miner,personal,chain,tx  
pool" --verbosity=4 > pchain.log 2>&1 &
```

and then run this file

```
./run.sh
```

Check runing log

tail -f pchain.log

```
ubuntu@ip-172-31-12-155:~/pchain/bin$ ./run.sh
ubuntu@ip-172-31-12-155:~/pchain/bin$ tail -f pchain.log
Validator:
Validator(ADD:24494A76BCF50803F771BCF408973E43F38383C PK:0071A435043F78CC14AD09AD2028ABE15E56664E3D925434E49549AE1CD45E1434A792CE7F5F2AA695093193E0AD4B31C43E317DA0F976AF5CEDA4E8BCD67651721B5856A6D75803715168A727F05C4AFCEC5CE441AD323866772818818682B39F7B422075A97BCAA470031863CF7526EEA17540CCB32332CC5ED0617B39694 VP:100)
)
DEBUG[01-10|10:56:56.236] addRound(round) round=0
DEBUG[01-10|10:56:56.236] addRound(round) round:=0
INFO [01-10|10:56:56.236] Tendermint (backend) GetBroadcaster: 0xc0004e41e0
INFO [01-10|10:56:56.236] Tendermint (backend) GetBroadcaster: 0xc0004e41e0
INFO [01-10|10:56:56.236] registerEventCallbacks received Request Event conR.con5.blockFromMiner has been set with height: 164
INFO [01-10|10:56:56.236] Received tick: old_t: (2s 163 0 RoundStepPrecommitWait), new_t: (999.05632ms 164 0 RoundStepNewHeight)
INFO [01-10|10:56:56.236] Scheduled timeout: dur: 999.05632ms, height: 164, round: 0, step: RoundStepNewHeight
INFO [01-10|10:56:57.236] Timed out: dur: 999.05632ms, height: 164, round: 0, step: RoundStepNewHeight
INFO [01-10|10:56:57.236] Received tick: timeout: 999.05632ms, (164/0/RoundStepNewHeight), Current: (164/0/RoundStepNewHeight)
DEBUG[01-10|10:56:57.236] Step 19 :RoundStepNewHeight
INFO [01-10|10:56:57.236] enterNewRound(164/0). Current: 164/0/RoundStepNewHeight
INFO [01-10|10:56:57.236] Validators: ValidatorSet{
Validator:
Validator(ADD:24494A76BCF50803F771BCF408973E43F38383C PK:0071A435043F78CC14AD09AD2028ABE15E56664E3D925434E49549AE1CD45E1434A792CE7F5F2AA695093193E0AD4B31C43E317DA0F976AF5CEDA4E8BCD67651721B5856A6D75803715168A727F05C4AFCEC5CE441AD323866772818818682B39F7B422075A97BCAA470031863CF7526EEA17540CCB32332CC5ED0617B39694 VP:100)
)
DEBUG[01-10|10:56:57.236] addRound(round) round:=1
DEBUG[01-10|10:56:57.236] addRound(round) round=1
INFO [01-10|10:56:57.236] cs.proposer, cs.Height, cs.Round are (6|164 0 Validator(ADD:24494A76BCF50803F771BCF408973E43F38383C PK:0071A435043F78CC14AD09AD2028ABE15E56664E3D925434E49549AE1CD45E1434A792CE7F5F2AA695093193E0AD4B31C43E317DA0F976AF5CEDA4E8BCD67651721B5856A6D75803715168A727F05C4AFCEC5CE441AD323866772818818682B39F7B422075A97BCAA470031863CF7526EEA17540CCB32332CC5ED0617B39694 VP:100)), 164, 0)
DEBUG[01-10|10:56:57.236] update proposer height=164 round=0 idx=0
DEBUG[01-10|10:56:57.236] proposer, privValidator are (Validator(ADD:24494A76BCF50803F771BCF408973E43F38383C PK:0071A435043F78CC14AD09AD2028ABE15E56664E3D925434E49549AE1CD45E1434A792CE7F5F2AA695093193E0AD4B31C43E317DA0F976AF5CEDA4E8BCD67651721B5856A6D75803715168A727F05C4AFCEC5CE441AD323866772818818682B39F7B422075A97BCAA470031863CF7526EEA17540CCB32332CC5ED0617B39694 VP:100), PrivValidator{24494A76BCF50803F771BCF408973E43F38383C})
DEBUG[01-10|10:56:57.236] IsProposer() return true
INFO [01-10|10:56:57.236] enterPropose(164/0). Current: 164/0/RoundStepNewRound
INFO [01-10|10:56:57.236] cs.proposer, cs.Height, cs.Round are (6|164 0 Validator(ADD:24494A76BCF50803F771BCF408973E43F38383C PK:0071A435043F78CC14AD09AD2028ABE15E56664E3D925434E49549AE1CD45E1434A792CE7F5F2AA695093193E0AD4B31C43E317DA0F976AF5CEDA4E8BCD67651721B5856A6D75803715168A727F05C4AFCEC5CE441AD323866772818818682B39F7B422075A97BCAA470031863CF7526EEA17540CCB32332CC5ED0617B39694 VP:100)), 164, 0)
DEBUG[01-10|10:56:57.236] proposer, privValidator are (Validator(ADD:24494A76BCF50803F771BCF408973E43F38383C PK:0071A435043F78CC14AD09AD2028ABE15E56664E3D925434E49549AE1CD45E1434A792CE7F5F2AA695093193E0AD4B31C43E317DA0F976AF5CEDA4E8BCD67651721B5856A6D75803715168A727F05C4AFCEC5CE441AD323866772818818682B39F7B422075A97BCAA470031863CF7526EEA17540CCB32332CC5ED0617B39694 VP:100), PrivValidator{24494A76BCF50803F771BCF408973E43F38383C})
DEBUG[01-10|10:56:57.236] IsProposer() return true
```