

Setup your own private Proof-of-Authority Ethereum network with Geth

Steps to be followed

1. cd Desktop/
2. mkdir devnet
3. cd devnet/
4. mkdir node1 node2
5. Cross check it by listing it using command "ls"
6. geth --datadir node1/ account new

"Set the password"

node1

Password : pwdnode1

Your new key was generated

Public address of the key: 0x217Ff623d20cADcafE07f22727B7bA6b1d04fDec

Path of the secret key file:

node1/keystore/UTC--2020-05-26T18-12-48.361661173Z--217ff623d20cadcafe07f22727b7ba6b1d04fdec

```
manishkumar@ULTS-LAP268:~$ cd Desktop
manishkumar@ULTS-LAP268:~/Desktop$ mkdir devnet
manishkumar@ULTS-LAP268:~/Desktop$ cd devnet
manishkumar@ULTS-LAP268:~/Desktop/devnet$ mkdir node1 node2
manishkumar@ULTS-LAP268:~/Desktop/devnet$ ls
node1 node2
manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node1/ account new
INFO [05-26|23:42:34.353] Maximum peer count          ETH=50 LES=0 total=50
INFO [05-26|23:42:34.353] Smartcard socket not found, disabling   err="stat /run/pcscd/pcscd.comm: no such file or directory"
Your new account is locked with a password. Please give a password. Do not forget this password.
Password:
Repeat password:

Your new key was generated

Public address of the key: 0x217Ff623d20cADcafE07f22727B7bA6b1d04fDec
Path of the secret key file: node1/keystore/UTC--2020-05-26T18-12-48.361661173Z--217ff623d20cadcafe07f22727b7ba6b1d04fdec

- You can share your public address with anyone. Others need it to interact with you.
- You must NEVER share the secret key with anyone! The key controls access to your funds!
- You must BACKUP your key file! Without the key, it's impossible to access account funds!
- You must REMEMBER your password! Without the password, it's impossible to decrypt the key!
```

```
7. geth --datadir node2/ account new
```

“Set the password”

node2

Password : pwdnode2

Your new key was generated

Public address of the key: 0x217Ff623d20cADcafE07f22727B7bA6b1d04fDec

Path of the secret key file:

node1/keystore/UTC--2020-05-26T18-12-48.361661173Z--217ff623d20cadcafe07f22727b7ba6b1d04fdec

```
manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node2/ account new
INFO [05-26|23:44:11.521] Maximum peer count                                     ETH=50 LES=0 total=50
INFO [05-26|23:44:11.521] Smartcard socket not found, disabling      err="stat /run/pcscd/pcscd.comm: no such file or d
irectory"
Your new account is locked with a password. Please give a password. Do not forget this password.
Password:
Repeat password:
Fatal: Passwords do not match
manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node2/ account new
INFO [05-26|23:44:23.654] Maximum peer count                                     ETH=50 LES=0 total=50
INFO [05-26|23:44:23.654] Smartcard socket not found, disabling      err="stat /run/pcscd/pcscd.comm: no such file or d
irectory"
Your new account is locked with a password. Please give a password. Do not forget this password.
Password:
Repeat password:

Your new key was generated

Public address of the key: 0x3c1F24E9D5ca49c7376D035ab80704CaE6651897
Path of the secret key file: node2/keystore/UTC--2020-05-26T18-14-33.256172736Z--3c1f24e9d5ca49c7376d035ab80704cae665
1897

- You can share your public address with anyone. Others need it to interact with you.
- You must NEVER share the secret key with anyone! The key controls access to your funds!
- You must BACKUP your key file! Without the key, it's impossible to access account funds!
- You must REMEMBER your password! Without the password, it's impossible to decrypt the key!

manishkumar@ULTS-LAP268:~/Desktop/devnet$ echo '217Ff623d20cADcafE07f22727B7bA6b1d04fDec' >> accounts.txt
manishkumar@ULTS-LAP268:~/Desktop/devnet$ echo '3c1F24E9D5ca49c7376D035ab80704CaE6651897' >> accounts.txt
manishkumar@ULTS-LAP268:~/Desktop/devnet$ ls
accounts.txt  node1  node2
```

```
8. echo '87366ef81db496edd0ea2055ca605e8686eec1e6' >> accounts.txt
echo '08a58f09194e403d02a1928a7bf78646cfcc260b0' >> accounts.txt
```

```
9. Use ls command and it will give account.txt ,node1, node2
```

```
10. cat accounts.txt
```

It will display public address of key for both the nodes

```
11.echo 'pwdnode1' > node1/password.txt
echo 'pwdnode2' > node2/password.txt
```

```
12.cat accounts.txt so it will give the following command.
```

```
manishkumar@ULTS-LAP268:~/Desktop/devnet$ echo 'pwdnode1' > node1/password.txt
manishkumar@ULTS-LAP268:~/Desktop/devnet$ echo 'pwdnode2' > node2/password.txt
manishkumar@ULTS-LAP268:~/Desktop/devnet$ ls
accounts.txt node1 node2
manishkumar@ULTS-LAP268:~/Desktop/devnet$ cd accounts.txt
bash: cd: accounts.txt: Not a directory
manishkumar@ULTS-LAP268:~/Desktop/devnet$ cd accounts.txt
bash: cd: accounts.txt: Not a directory
manishkumar@ULTS-LAP268:~/Desktop/devnet$ cat accounts.txt
217FF623d20cADcafe07f22727B7bA6b1d04fDec
3c1F24E9D5ca49c7376D035ab80704CaE6651897
```

13. Create a genesis file.

Use "puppeth"

```
manishkumar@ULTS-LAP268:~/Desktop/devnet$ puppeth
+-----+
| Welcome to puppeth, your Ethereum private network manager |
|
| This tool lets you create a new Ethereum network down to |
| the genesis block, bootnodes, miners and ethstats servers |
| without the hassle that it would normally entail. |
|
| Puppeth uses SSH to dial in to remote servers, and builds |
| its network components out of Docker containers using the |
| docker-compose toolset. |
+-----+
Please specify a network name to administer (no spaces, hyphens or capital letters please)
> genesis
Sweet, you can set this via --network=genesis next time!
INFO [05-26|23:49:11.589] Administering Ethereum network
WARN [05-26|23:49:11.589] No previous configurations found
          name=genesis
          path=/home/manishkumar/.puppeth/genesis
```

What would you like to do? (default = stats)

1. Show network stats
2. Configure new genesis
3. Track new remote server
4. Deploy network components

> 2

What would you like to do? (default = create)

1. Create new genesis from scratch
2. Import already existing genesis

> 1

```
Which consensus engine to use? (default = clique)
1. Ethash - proof-of-work
2. Clique - proof-of-authority
> 2

How many seconds should blocks take? (default = 15)
> 5

Which accounts are allowed to seal? (mandatory at least one)
> 0x217Ff623d20cADcafE07f22727B7bA6b1d04fDec
> 0x

Which accounts should be pre-funded? (advisable at least one)
> 0x3c1F24E9D5ca49c73760035ab80704CaE6651897
> 0x

Should the precompile-addresses (0x1 .. 0xff) be pre-funded with 1 wei? (advisable yes)
> yes

Specify your chain/network ID if you want an explicit one (default = random)
> 4545
INFO [05-26|23:52:54.903] Configured new genesis block

What would you like to do? (default = stats)
1. Show network stats
2. Manage existing genesis
3. Track new remote server
4. Deploy network components
```

Note : seal both the account

Which accounts are allowed to seal? (mandatory at least one)

```
> 0x9d6579a84e099F5B5270455dfa82E6b6EBFa42d3
> 0x731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0
> 0x
```

Which accounts should be pre-funded? (advisable at least one)

```
> 0x9d6579a84e099F5B5270455dfa82E6b6EBFa42d3
> 0x731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0
> 0x
```

Should the precompile-addresses (0x1 .. 0xff) be pre-funded with 1 wei?
(advisable yes)

```
> yes
```

14. Give public address of key for the node which you wanted to block

15. Same which you wanted to pre-funded.

16. Press yes

17. Specify the chain id i.e - 4545.

```
4. Deploy network components
> 2

1. Modify existing configurations
2. Export genesis configurations
3. Remove genesis configuration
> 2

Which folder to save the genesis specs into? (default = current)
  Will create genesis.json, genesis-aleth.json, genesis-harmony.json, genesis-parity.json
>

[INFO] [05-26|23:53:12.807] Saved native genesis chain spec      path=genesis.json
[ERROR][05-26|23:53:12.807] Failed to create Aleth chain spec   err="unsupported consensus engine"
[ERROR][05-26|23:53:12.807] Failed to create Parity chain spec   err="unsupported consensus engine"
[INFO] [05-26|23:53:12.812] Saved genesis chain spec           client=harmony path=genesis-harmony.json

What would you like to do? (default = stats)
1. Show network stats
2. Manage existing genesis
3. Track new remote server
4. Deploy network components
> ^C
manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node1/ init genesis.json
[INFO] [05-26|23:54:05.722] Maximum peer count                  ETH=50 LES=0 total=50
[INFO] [05-26|23:54:05.722] Smartcard socket not found, disabling   err="stat /run/pcscd/pcscd.comm: no such file or directory"
[INFO] [05-26|23:54:05.723] Allocated cache and file handles      database=/home/manishkumar/Desktop/devnet/node1/geth/chaindata cache=16.00MiB handles=16
[INFO] [05-26|23:54:05.732] Writing custom genesis block
[INFO] [05-26|23:54:05.743] Persisted trie from memory database    nodes=356 size=50.51KiB time=1.795856ms gcnodes=0
gcsiz=0.00B gctime=0s livenodes=1 livesize=0.00B
[INFO] [05-26|23:54:05.743] Successfully wrote genesis state       database=chaindata hash=f9458d..2b65da"
[INFO] [05-26|23:54:05.743] Successfully wrote genesis state       database=chaindata hash=f9458d..2b65da"
```

18. Initialize your nodes

```
geth --datadir node1/ init genesis.json
geth --datadir node2/ init genesis.json
```

```
manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node1/ init genesis.json
[INFO] [05-26|23:54:05.722] Maximum peer count                  ETH=50 LES=0 total=50
[INFO] [05-26|23:54:05.722] Smartcard socket not found, disabling   err="stat /run/pcscd/pcscd.comm: no such file or directory"
[INFO] [05-26|23:54:05.723] Allocated cache and file handles      database=/home/manishkumar/Desktop/devnet/node1/geth/chaindata cache=16.00MiB handles=16
[INFO] [05-26|23:54:05.732] Writing custom genesis block
[INFO] [05-26|23:54:05.743] Persisted trie from memory database    nodes=356 size=50.51KiB time=1.795856ms gcnodes=0
gcsiz=0.00B gctime=0s livenodes=1 livesize=0.00B
[INFO] [05-26|23:54:05.743] Successfully wrote genesis state       database=chaindata hash=f9458d..2b65da"
[INFO] [05-26|23:54:05.743] Successfully wrote genesis state       database=chaindata hash=f9458d..2b65da"
manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node2/ init genesis.json
[INFO] [05-26|23:54:21.281] Maximum peer count                  ETH=50 LES=0 total=50
[INFO] [05-26|23:54:21.281] Smartcard socket not found, disabling   err="stat /run/pcscd/pcscd.comm: no such file or directory"
[INFO] [05-26|23:54:21.282] Allocated cache and file handles      database=/home/manishkumar/Desktop/devnet/node2/geth/lightchaindata cache=16.00MiB handles=16
[INFO] [05-26|23:54:05.749] Writing custom genesis block
[INFO] [05-26|23:54:05.755] Persisted trie from memory database    nodes=356 size=50.51KiB time=1.450666ms gcnodes=0
gcsiz=0.00B gctime=0s livenodes=1 livesize=0.00B
[INFO] [05-26|23:54:05.755] Successfully wrote genesis state       database=lightchaindata hash=f9458d..2b65da"
[INFO] [05-26|23:54:05.755] Successfully wrote genesis state       database=lightchaindata hash=f9458d..2b65da"
manishkumar@ULTS-LAP268:~/Desktop/devnet$ bootnode -genkey boot.key
```

```

19. bootnode -genkey boot.key
20. check the structure via tree
21. Generate the enode using following
bootnode -nodekey boot.key -verbosity 9 -addr :30310

```

```

manishkumar@ULTS-LAP268:~/Desktop/devnet$ bootnode -genkey boot.key
manishkumar@ULTS-LAP268:~/Desktop/devnet$ tree -L 2
.
├── accounts.txt
├── boot.key
├── genesis-harmony.json
└── genesis.json
    └── node1
        ├── geth
        └── keystore
            └── password.txt
    └── node2
        ├── geth
        └── keystore
            └── password.txt

6 directories, 6 files
manishkumar@ULTS-LAP268:~/Desktop/devnet$ bootnode -nodekey boot.key -verbosity 9 -addr :30310
enode://e1fe77b74efeb8fe2e044c351538a052646316950fb983c77112928cf2776e9e2a3112b0af7620300667e28b9d9882c4856ed5eee84b
3dec05e07aa45d71743@127.0.0.1:0?discport=30310
Note: you're using cmd/bootnode, a developer tool.

```

i.e node 1

```

geth --datadir node1/ --syncmode 'full' --port 30311 --rpc --rpcaddr 'localhost' --rpcport 8501 --rpcapi
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock --bootnodes
'enode://e1fe77b74efeb8fe2e044c351538a052646316950fb983c77112928cf2776e9e2a3112b0af7620300667e28b9
d9882c4856ed5eee84bcdec05e07aa45d71743@127.0.0.1:30310' --networkid 4545 --gasprice '1' --unlock
'0x217Ff623d20cADcafE07f22727B7bA6b1d04fDec' --password node1/password.txt --mine

```

```

manishkumar@ULTS-LAP268:~/Desktop/devnet$ geth --datadir node1/ --syncmode 'full' --port 30311 --rpc --rpcaddr 'localhost' --rpcport 8501 --rpcapi
api 'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock --bootnodes 'enode://e1fe77b74efeb8fe2e044c351538a052646316950fb983c7711292
8cf2776e9e2a3112b0af7620300667e28b9d9882c4856ed5eee84bcdec05e07aa45d71743@127.0.0.1:30310' --networkid 4545 --gasprice '1' --unlock '0x217Ff62
3d20cADcafE07f22727B7bA6b1d04fDec' --password node1/password.txt --mine
INFO [05-27|01:03:09.117] Maximum peer count                                     ETH=50 LES=0 total=50
WARN [05-27|01:03:09.117] The flag --rpc is deprecated and will be removed in the future, please use --http
WARN [05-27|01:03:09.117] The flag --rpcaddr is deprecated and will be removed in the future, please use --http.addr
WARN [05-27|01:03:09.117] The flag --rpcport is deprecated and will be removed in the future, please use --http.port
WARN [05-27|01:03:09.117] The flag --rpcapi is deprecated and will be removed in the future, please use --http.api
INFO [05-27|01:03:09.117] Smartcard socket not found, disabling      err="stat /run/pcscd/pcscd.comm: no such file or directory"
WARN [05-27|01:03:09.118] The flag --gasprice is deprecated and will be removed in the future, please use --miner.gasprice
INFO [05-27|01:03:09.118] Starting peer-to-peer node                         instance=Geth/v1.9.14-stable-6d74d1e5/linux-amd64/g01.14.2
INFO [05-27|01:03:09.118] Allocated trie memory caches                      clean=256.00MiB dirty=256.00MiB
INFO [05-27|01:03:09.118] Allocated cache and file handles                  database=/home/manishkumar/Desktop/devnet/node1/geth/chaindata cache=512.00M
IB handles=524288
INFO [05-27|01:03:09.140] Opened ancient database                           database=/home/manishkumar/Desktop/devnet/node1/geth/chaindata/ancient
INFO [05-27|01:03:09.140] Initialised chain configuration                   config="[ChainID: 4545 Homestead: 0 DAO: <nil> DAOSupport: false EIP150: 0 E
IP155: 0 EIP158: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: 0, Muir Glacier: <nil>, Engine: clique]"
INFO [05-27|01:03:09.140] Initialising Ethereum protocol                     versions="[65 64 63]" network=4545 dbversion=7
INFO [05-27|01:03:09.141] Loaded most recent local header                  number=0 hash="f9458d..2b65da" td=1 age=1h13m44s
INFO [05-27|01:03:09.141] Loaded most recent local full block                number=0 hash="f9458d..2b65da" td=1 age=1h13m44s
INFO [05-27|01:03:09.141] Loaded most recent local fast block               number=0 hash="f9458d..2b65da" td=1 age=1h13m44s

```

i.e node 2

```

geth --datadir node2/ --syncmode 'full' --port 30312 --rpc --rpcaddr 'localhost' --rpcport 8502 --rpcapi
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock --bootnodes
'enode://e1fe77b74efeb8fe2e044c351538a052646316950fb983c77112928cf2776e9e2a3112b0af7620300667e28b9
d9882c4856ed5eee84bcdec05e07aa45d71743@127.0.0.1:30310' --networkid 4545 --gasprice '1' --unlock
'0x3c1F24E9D5ca49c7376D035ab80704CaE6651897' --password node2/password.txt --mine

```

for node 1

```
geth --datadir node1/ --syncmode 'full' --port 30311 --rpc --rpcaddr
'localhost' --rpcport "8501" --rpcapi
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock
--bootnodes
'enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88
e5d206d42@127.0.0.1:30310' --networkid 4646 --gasprice '1' --unlock
'0x9d6579a84e099F5B5270455dfa82E6b6EBFa42d3' --password
node1/password.txt --mine --rpccorsdomain "*"
```

for node2

```
geth --datadir node2/ --syncmode 'full' --port 30312 --rpc --rpcaddr
'localhost' --rpcport "8502" --rpcapi
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock
--bootnodes
'enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88
e5d206d42@127.0.0.1:30310' --networkid 4646 --gasprice '1' --unlock
'0x731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0' --password
node2/password.txt --mine --rpccorsdomain "*"
```

```
manishkumar@GULTS-LAP268:~/Desktop/devnet$ geth --datadir node2/ --syncmode 'full' --port 30312 --rpc --rpccaddr 'localhost' --rpcport 8502 --rpcapi 'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock --bootnodes 'enode://fe1f77b74feeb8fe2e04c3c351538a052646316950fb983c77112929d8cf27d76e9e2a3112b0af7620300667e28b9d9882c4856ed3eeef84bcde05e07a45d71743@127.0.0.1:30310' --networkid 4545 --gasprice '1' --unlock '0x3c1F24E9D5ca49c7376D035ab80704CaE6651897' --password node2/password.txt --mine
INFO [05-27|01:05:09.114] Maximum peer count                                     ETH=50 LES=0 total=50
WARN [05-27|01:05:09.114] The flag --rpc is deprecated and will be removed in the future, please use --http
WARN [05-27|01:05:09.114] The flag --rpccaddr is deprecated and will be removed in the future, please use --http.addr
WARN [05-27|01:05:09.114] The flag --rpcport is deprecated and will be removed in the future, please use --http.port
WARN [05-27|01:05:09.114] The flag --rpccap1 is deprecated and will be removed in the future, please use --http.api
INFO [05-27|01:05:09.114] Smartcard socket not found, disabling          err="stat /run/pcscd/pcscd.comm: no such file or directory"
WARN [05-27|01:05:09.114] The flag --gasprice is deprecated and will be removed in the future, please use --miner.gasprice
INFO [05-27|01:05:09.114] Starting peer-to-peer node                         instance=Geth/v1.9.14-stable-6d74d1e5/linux-amd64/go1.14.2
INFO [05-27|01:05:09.114] Allocated trie memory caches                      clean=256.00MiB dirty=256.00MiB
INFO [05-27|01:05:09.114] Allocated cache and file handles                  database=/home/manishkumar/Desktop/devnet/node2/geth/chaindata cache=512.00MiB
IB handles=524288
INFO [05-27|01:05:09.137] Opened ancient database
INFO [05-27|01:05:09.138] Initialised chain configuration
IP155: 0 EIP158: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: 0, Muir Glacier: <nil>, Engine: clique"
INFO [05-27|01:05:09.138] Initialising Ethereum protocol
INFO [05-27|01:05:09.140] Loaded most recent local header
INFO [05-27|01:05:09.140] Loaded most recent local full block
INFO [05-27|01:05:09.140] Loaded most recent local fast block
INFO [05-27|01:05:09.141] Loaded local transaction journal
INFO [05-27|01:05:09.141] Regenerated local transaction journal
INFO [05-27|01:05:09.227] New local node record
database=/home/manishkumar/Desktop/devnet/node2/geth/chaindata/ancient
config={"ChainID": 4545, "Homestead": 0, "DAO": <nil>, "DAOSupport": false, "EIP150": 0, "EIP155": 0, "EIP158": 0, "Byzantium": 0, "Constantinople": 0, "Petersburg": 0, "Istanbul": 0, "MuirGlacier": <nil>, "Engine": "clique"}
versions=[{"65": 64, "63": 63}], network=4545, dbversion=7
number=0 hash="f9458d...2b65da" td=1 age=1h15m44s
number=0 hash="f9458d...2b65da" td=1 age=1h15m44s
number=0 hash="f9458d...2b65da" td=1 age=1h15m44s
transactions=0 dropped=0
transactions=0 accounts=0
seq=2 id=d0239690179515a ip=127.0.0.1 udn=30312 tcn=30312
```

Finally mining

5th trial

node1

Public address of the key:

0x9d6579a84e099F5B5270455dfa82E6b6EBFa42d3

Path of the secret key file:

node1/keystore/UTC--2020-06-08T10-38-03.783296324Z--9d6579a84e099f5

b5270455dfa82e6b6ebfa42d3

```
echo '9d6579a84e099F5B5270455dfa82E6b6EBFa42d3' >> accounts.txt
```

node2

Public address of the key:

0x731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0

Path of the secret key file:

node2/keystore/UTC--2020-06-08T10-39-25.353656639Z--731a9ee26d6df
44e394ffbad1eca61611f9b5b0

```
echo '731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0' >> accounts.txt
```

```
enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6  
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88  
e5d206d42@127.0.0.1:30310
```

for node 1

```
geth --datadir node1/ --syncmode 'full' --port 30311 --rpc --rpcaddr  
'localhost' --rpcport "8501" --rpcapi  
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock  
--bootnodes  
'enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6  
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88  
e5d206d42@127.0.0.1:30310' --networkid 4646 --gasprice '1' --unlock  
'0x9d6579a84e099F5B5270455dfa82E6b6EBFa42d3' --password  
node1/password.txt --mine --rpccorsdomain "*"
```

for node2

```
geth --datadir node2/ --syncmode 'full' --port 30312 --rpc --rpcaddr  
'localhost' --rpcport "8502" --rpcapi  
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock  
--bootnodes  
'enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6  
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88  
e5d206d42@127.0.0.1:30310' --networkid 4646 --gasprice '1' --unlock  
'0x731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0' --password  
node2/password.txt --mine --rpccorsdomain "/*"
```

How to do deployment of smart contracts

1. go to remix and select the previous version
2. make a file with .sol extension
3. select the version of solidity

4. copy the ether account number , compile and run
5. run , select web3 provider
6. copy the ether account number and select the transact
7. then you can see the list of transaction under deploy contracts

note make sure you will check the correct port number

Terminal4

to get it - geth attach <http://localhost:8501>

to check the ether amount

```
web3.fromWei(eth.getBalance(eth.accounts[0]), 'ether')
```

V---

Node 1

```
geth --datadir node1/ --syncmode 'full' --port 30311 --rpc --rpcaddr  
'localhost' --rpcport "8501" --rpcapi  
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock  
--bootnodes  
'enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6  
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88  
e5d206d42@127.0.0.1:30310' --networkid 4646 --gasprice '1' --unlock  
'0x9d6579a84e099F5B5270455dfa82E6b6EBFa42d3' --password  
node1/password.txt --mine --rpccorsdomain "*"
```

Node 2

```
geth --datadir node2/ --syncmode 'full' --port 30312 --rpc --rpcaddr  
'localhost' --rpcport "8502" --rpcapi  
'personal,db,eth,net,web3,txpool,miner' --allow-insecure-unlock  
--bootnodes  
'enode://94fd0bc57cc51c4f4ea5206b49e3059390c20a00b5350c87d9678a6
```

```
6cc320f38dce096eb06e52d34ef7157b7ddfc924f5d6169129c34fa93548eb88  
e5d206d42@127.0.0.1:30310' --networkid 4646 --gasprice '1' --unlock  
'0x731a9eE26D6DFE44E394FfBaD1ECA61611f9B5b0' --password  
node2/password.txt --mine --rpccorsdomain "*"
```

-----How to integrate with
Caliper-----

- 1)git clone link: git clone
<https://github.com/hyperledger/caliper-benchmarks.git>
- 2)cd corresponding folder
- 3)npm init -y
- 4)npm i web3
- 5)npm install --only=prod @hyperledger/caliper-cli@0.3.0
- 6)npx caliper bind --caliper-bind-sut ethereum --caliper-bind-sdk latest
- 7)create a json file corresponding to our ethereum network (geth, ganache,etc).
- 8)Ensure the mining is happening.
- 9)npx caliper launch master --caliper-bind-sut ethereum:latest
--caliper-workspace . --caliper-benchconfig
benchmarks/scenario/simple/config.yaml --caliper-networkconfig
.ethereum.json (give the path of ethereum json accordingly - in my case it lies in the cloned directory directly)

Open terminal and start mining

For integration with caliper

1. git clone <https://github.com/hyperledger/caliper-benchmarks.git>
2. cd caliper-benchmarks
3. npm init -y (it will take the default)

```

manishkumar@ULTS-LAP268:~/Desktop$ git clone https://github.com/hyperledger/caliper-benchmarks.git
Cloning into 'caliper-benchmarks'...
remote: Enumerating objects: 59, done.
remote: Counting objects: 100% (59/59), done.
remote: Compressing objects: 100% (42/42), done.
remote: Total 3858 (delta 14), reused 48 (delta 13), pack-reused 3799
Receiving objects: 100% (3858/3858), 18.85 MiB | 842.00 KiB/s, done.
Resolving deltas: 100% (1571/1571), done.
manishkumar@ULTS-LAP268:~/Desktop$ cd caliper
bash: cd: caliper: No such file or directory
manishkumar@ULTS-LAP268:~/Desktop$ cd caliper-benchmarks
manishkumar@ULTS-LAP268:~/Desktop/caliper-benchmarks$ npm init -y
Wrote to /home/manishkumar/Desktop/caliper-benchmarks/package.json:

{
  "name": "caliper-benchmarks",
  "version": "1.0.0",
  "description": "This repository contains sample benchmarks that may be used by Caliper, a blockchain performance benchmark framework. For more information on Caliper, please see the [Caliper main repository](https://github.com/hyperledger/caliper/)",
  "main": "index.js",
  "scripts": {
    "test": "echo \\'Error: no test specified\\' && exit 1"
  },
  "repository": {
    "type": "git",
    "url": "git+https://github.com/hyperledger/caliper-benchmarks.git"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "bugs": {
    "url": "https://github.com/hyperledger/caliper-benchmarks/issues"
  },
  "homepage": "https://github.com/hyperledger/caliper-benchmarks#readme"
}

```

4. npm i web3

```

manishkumar@ULTS-LAP268:~/Desktop/caliper-benchmarks$ npm i web3
npm WARN deprecated mkdirp-promise@0.1: This package is broken and no longer maintained. 'mkdirp' itself supports promises now, please switch to that.
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated multicodec@0.5.7: stable api reached

> keccak@2.1.0 install /home/manishkumar/Desktop/caliper-benchmarks/node_modules/keccak
> npm run rebuild || echo "Keccak bindings compilation fail. Pure JS implementation will be used."

> keccak@2.1.0 rebuild /home/manishkumar/Desktop/caliper-benchmarks/node_modules/keccak
> node-gyp rebuild

make: Entering directory '/home/manishkumar/Desktop/caliper-benchmarks/node_modules/keccak/build'
  CXX(target) Release/obj.target/keccak/src/addon.o
  CC(target) Release/obj.target/keccak/src/libkeccak-64/KeccakSpongeWidth1600.o
  CC(target) Release/obj.target/keccak/src/libkeccak-64/KeccakP-1600-opt64.o
  SOLINK_MODULE(target) Release/obj.target/keccak.node
  COPY Release/keccak.node
make: Leaving directory '/home/manishkumar/Desktop/caliper-benchmarks/node_modules/keccak/build'

> secp256k1@3.8.0 install /home/manishkumar/Desktop/caliper-benchmarks/node_modules/secp256k1
> npm run rebuild || echo "Secp256k1 bindings compilation fail. Pure JS implementation will be used."

> secp256k1@3.8.0 rebuild /home/manishkumar/Desktop/caliper-benchmarks/node_modules/secp256k1
> node-gyp rebuild

make: Entering directory '/home/manishkumar/Desktop/caliper-benchmarks/node_modules/secp256k1/build'
  CXX(target) Release/obj.target/secp256k1/src/addon.o
  CXX(target) Release/obj.target/secp256k1/src/privatekey.o
  ./src/privatekey.cc: In function 'Nan::NAN_METHOD_RETURN_TYPE privateKeyNegate(Nan::NAN_METHOD_ARGS_TYPE)':
  ./src/privatekey.cc:73:61: warning: ignoring return value of 'int secp256k1_ec_privkey_negate(const secp256k1_context*, unsigned char*)', declared with attribute warn_unused_result [-Wunused-result]
    secp256k1_ec_privkey_negate(secp256k1ctx, &private_key[0]);

```

5. npm install --only=prod @hyperledger/caliper-cli@0.3.0 (install caliper)

```

manishkumar@ULTS-LAP268:~/Desktop/caliper-benchmarks$ npm install --only=prod @hyperledger/caliper-cli@0.3.0
> scrypt@6.0.3 preinstall /home/manishkumar/Desktop/caliper-benchmarks/node_modules/scrypt
> node node-scrypt-preinstall.js

> scrypt@6.0.3 install /home/manishkumar/Desktop/caliper-benchmarks/node_modules/scrypt
> node-gyp rebuild

make: Entering directory '/home/manishkumar/Desktop/caliper-benchmarks/node_modules/scrypt/build'
  SOLINK_MODULE(target) Release/obj.target/copied_files.node
  COPY Release/copied_files.node
  CC(target) Release/obj.target/scrypt_wrapper/src/util/memlimit.o
  CC(target) Release/obj.target/scrypt_wrapper/src/scryptwrapper/keyderivation.o
  CC(target) Release/obj.target/scrypt_wrapper/src/scryptwrapper/pickparams.o
  CC(target) Release/obj.target/scrypt_wrapper/src/scryptwrapper/hash.o
  AR(target) Release/obj.target/scrypt_wrapper.a
  COPY Release/scrypt_wrapper.a
  CC(target) Release/obj.target/scrypt_lib/scrypt/scrypt-1.2.0/lib/crypto/crypto_scrypt.o
  CC(target) Release/obj.target/scrypt_lib/scrypt/scrypt-1.2.0/lib/crypto/crypto_scrypt_smix.o
  CC(target) Release/obj.target/scrypt_lib/scrypt/scrypt-1.2.0/libperciva/util/warnp.o
  CC(target) Release/obj.target/scrypt_lib/scrypt/scrypt-1.2.0/libperciva/util/insecure_memzero.o
  CC(target) Release/obj.target/scrypt_lib/scrypt/scrypt-1.2.0/lib/scryptenc/scryptenc_cpuperf.o
  AR(target) Release/obj.target/scrypt_lib.a
  COPY Release/scrypt_lib.a
  CXX(target) Release/obj.target/scrypt/src/node-boilerplate/scrypt_common.o
  CXX(target) Release/obj.target/scrypt/src/node-boilerplate/scrypt_params_async.o
In file included from ../src/node-boilerplate/inc/scrypt_params_async.h:28:0,
                 from ../src/node-boilerplate/scrypt_params_async.cxx:4:
../src/node-boilerplate/inc/scrypt_async.h: In member function 'virtual void ScryptAsyncWorker::HandleErrorCallback()':

```

6. npx caliper bind --caliper-bind-sut ethereum --caliper-bind-sdk latest (bind the test cases according to our requirement)

```

manishkumar@ULTS-LAP268:~/Desktop/caliper-benchmarks$ npx caliper bind --caliper-bind-sut ethereum --caliper-bind-sdk latest
2020.06.15-18:25:51.271 warn [caliper] [bind] SUT SDK version is not specified, defaulting to "latest"
2020.06.15-18:25:51.272 warn [caliper] [bind] Working directory for binding not specified. Using "/home/manishkumar/Desktop/caliper-benchmarks"
2020.06.15-18:25:51.272 info [caliper] [bind] Binding for ethereum@latest. This might take some time...
2020.06.15-18:25:51.272 info [caliper] [bind] Binding working directory: /home/manishkumar/Desktop/caliper-benchmarks
2020.06.15-18:25:51.273 info [caliper] [bind] Calling npm with: install web3@1.2.0
npm [WARN] deprecated mkdirp@0.5.1: This package is broken and no longer maintained. 'mkdirp' itself supports promises now, please switch to that.

> web3-providers-ws@1.2.0 preinstall /home/manishkumar/Desktop/caliper-benchmarks/node_modules/web3-providers-ws
> rm -rf node_modules/websocket/.git

> websocket@1.0.26 install /home/manishkumar/Desktop/caliper-benchmarks/node_modules/websocket
> (node-gyp rebuild 2> builderror.log) || (exit 0)

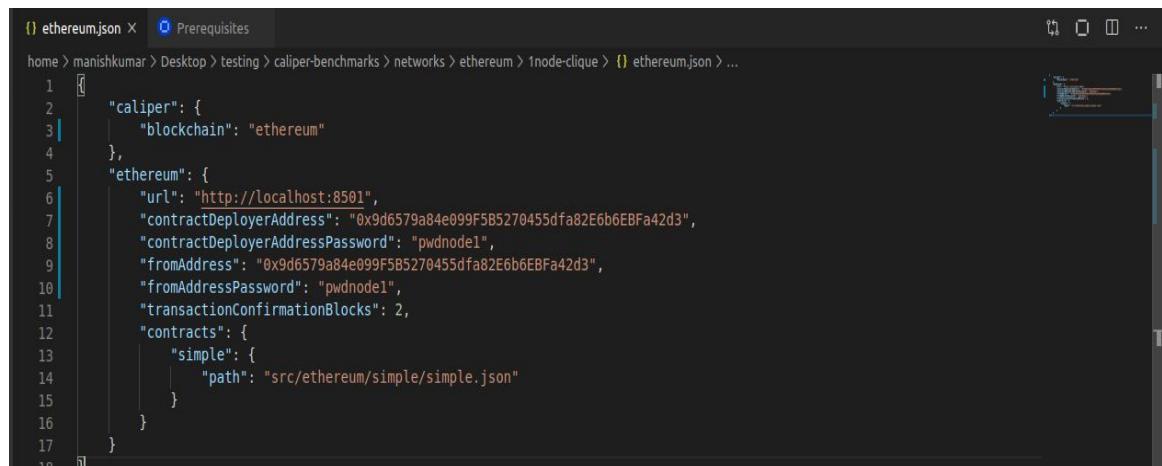
make: Entering directory '/home/manishkumar/Desktop/caliper-benchmarks/node_modules/websocket/build'
  CXX(target) Release/obj.target/bufferutil/src/bufferutil.o
  SOLINK_MODULE(target) Release/obj.target/bufferutil.node
  COPY Release/bufferutil.node
  CXX(target) Release/obj.target/validation/src/validation.o
  SOLINK_MODULE(target) Release/obj.target/validation.node
make: Leaving directory '/home/manishkumar/Desktop/caliper-benchmarks/node_modules/websocket/build'
npm [WARN] notsup Unsupported engine for mkdirp@1.0.4: wanted: {"node":">=10"} (current: {"node":"8.16.2","npm":"6.14.5"})
npm [WARN] notsup Not compatible with your version of node/npm: mkdirp@1.0.4

+ web3@1.2.0
added 33 packages from 26 contributors, removed 30 packages, updated 26 packages and audited 563 packages in 33.2s

4 packages are looking for funding
  run `npm fund` for details

```

7. Create a json file. Go to "/caliper-benchmarks/networks/ethereum/1node-clique/ethereum.json".
8. here i have select clique for POA. and json file is given below



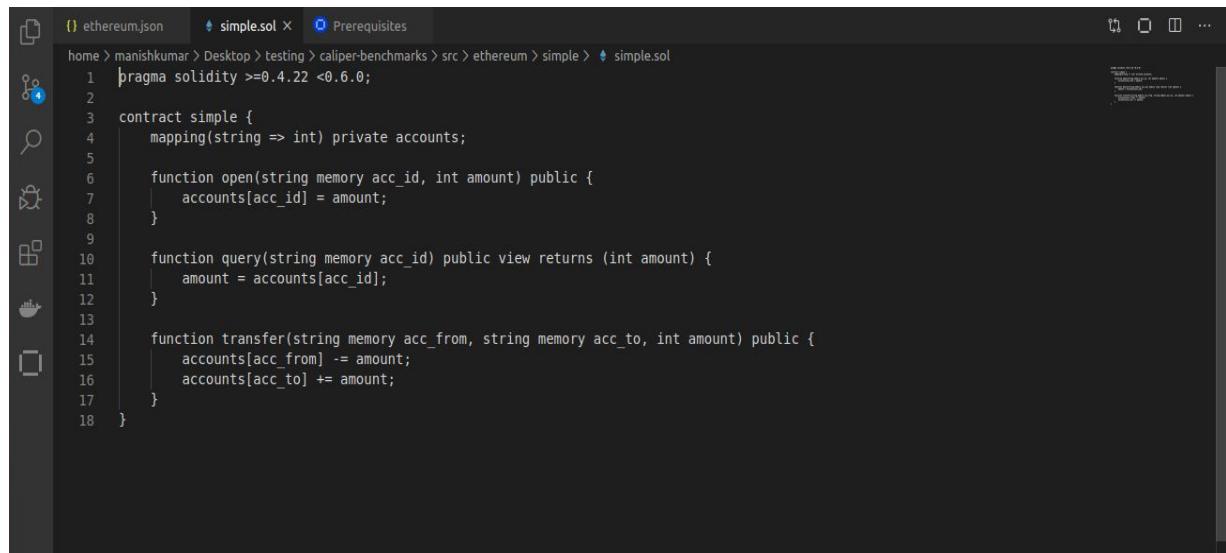
```
1 [{"caliper": {"blockchain": "ethereum"}, "ethereum": {"url": "http://localhost:8501", "contractDeployerAddress": "0x9d6579a84e099f5b5270455dfa82e6b6EBFa42d3", "contractDeployerAddressPassword": "pwdnode1", "fromAddress": "0x9d6579a84e099f5b5270455dfa82e6b6EBFa42d3", "fromAddressPassword": "pwdnode1", "transactionConfirmationBlocks": 2, "contracts": {"simple": {"path": "src/ethereum/simple/simple.json"}}}}]
```

check the port number of rpc and it should be the same. If you have two accounts involved in mining ,give one account address and password at both the address places.

9. To know the sample smart contract , follow the path "caliper-benchmarks/src/ethereum/simple" there will be two files



10. In sample.sol. It is the sample smart contract

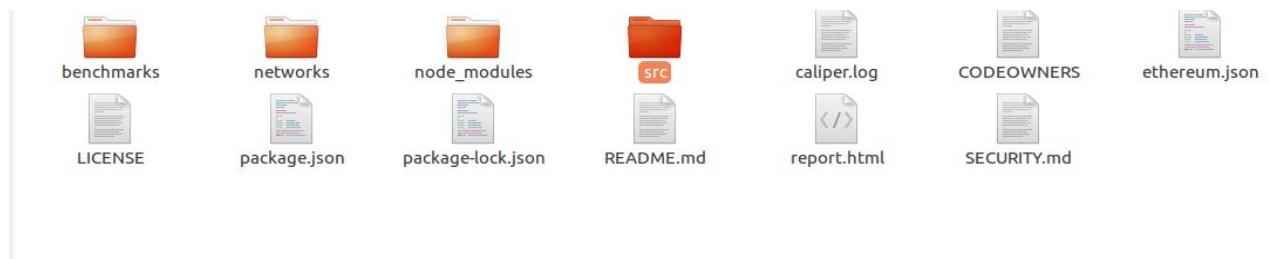


```
1 pragma solidity >=0.4.22 <0.6.0;
2
3 contract simple {
4     mapping(string => int) private accounts;
5
6     function open(string memory acc_id, int amount) public {
7         accounts[acc_id] = amount;
8     }
9
10    function query(string memory acc_id) public view returns (int amount) {
11        amount = accounts[acc_id];
12    }
13
14    function transfer(string memory acc_from, string memory acc_to, int amount) public {
15        accounts[acc_from] -= amount;
16        accounts[acc_to] += amount;
17    }
18 }
```

11. And in simple.json . sample test cases are available as below.

```
{} simple.json ×
home > manishkumar > Desktop > testing > caliper-benchmarks > src > ethereum > simple > {} simple.json > ...
1  [
2    "name": "simple",
3    "abi": [
4      {
5        "constant": false,
6        "inputs": [
7          {
8            "internalType": "string",
9            "name": "acc_from",
10           "type": "string"
11          },
12          {
13            "internalType": "string",
14            "name": "acc_to",
15           "type": "string"
16          },
17          {
18            "internalType": "int256",
19            "name": "amount",
20           "type": "int256"
21          }
22        ],
23        "name": "transfer",
24        "outputs": [],
25        "payable": false,
26        "stateMutability": "nonpayable",
27        "type": "function"
28      },
29      {
30        "constant": true,
31        "inputs": [
32          {
33            "internalType": "string",
34            "name": "acc_id",
35           "type": "string"
36          }
37        ]
38      }
39    ]
40  ]
41 }
```

12. Save that edited ethereum.json file in below structure



13. npx caliper launch master --caliper-bind-sut ethereum:latest
--caliper-workspace . --caliper-benchconfig
benchmarks/scenario/simple/config.yaml --caliper-networkconfig
.ethereum.json

```

XL
manishkumar@ULTRASPIRE-LAP268:~/Desktop/caliper-benchmarks$ npx caliper launch master --caliper-bind-sut ethereum:latest --caliper-workspace . --caliper-benchconfig benchmarks/scenario/simple/config.yaml --caliper-networkconfig ./ethereum.json
2020.06.15-19:10:03.900 info [caliper] [cli-launch-master] Binding specification is present, performing binding for "ethereum:latest"
2020.06.15-19:10:03.902 warn [caliper] [bind] Working directory for binding not specified. Using "/home/manishkumar/Desktop/caliper-benchmarks"
2020.06.15-19:10:03.902 tinfo [caliper] [bind] Binding for ethereum:latest. This might take some time...
2020.06.15-19:10:03.903 info [caliper] [bind] Binding working directory: /home/manishkumar/Desktop/caliper-benchmarks
2020.06.15-19:10:03.903 tinfo [caliper] [bind] Calling npm with: install web3@0.12.0
npm WARN deprecated mkdirp-promised@0.5.0: This package is broken and no longer maintained. 'mkdirp' itself supports promises now, please switch to it instead.
npm WARN notsup Unsupported engine for mkdirp@0.4: wanted: {"node":">=10"} (current: {"node":"8.16.2","npm":"6.14.5"})
npm WARN notsup Not compatible with your version of node/npm: mkdirp@0.4
+ web3@0.12.0
updated 1 package and audited 563 packages in 39.339s
4 packages are looking for funding
  run `npm fund` for details
found 2 low severity vulnerabilities
  run `npm audit fix` to fix them, or `npm audit` for details
2020.06.15-19:10:43.815 info [caliper] [cli-launch-master] Set workspace path: /home/manishkumar/Desktop/caliper-benchmarks
2020.06.15-19:10:43.816 info [caliper] [cli-launch-master] Set benchmark configuration path: /home/manishkumar/Desktop/caliper-benchmarks/benchmarks/scenario/simple/config.yaml
2020.06.15-19:10:43.816 info [caliper] [cli-launch-master] Set network configuration path: /home/manishkumar/Desktop/caliper-benchmarks/ethereum.json
2020.06.15-19:10:43.816 info [caliper] [cli-launch-master] Set SUT type: ethereum:latest
2020.06.15-19:10:44.024 info [caliper] [benchmark-validator] No observer specified, will default to `none`
2020.06.15-19:10:44.025 info [caliper] [caliper-engine] Starting benchmark flow
2020.06.15-19:10:44.028 info [caliper] [caliper-engine] Network configuration attribute "caliper.command.start" is not present, skipping start command
2020.06.15-19:10:44.688 info [caliper] [caliper-engine] Executed "init" step in 0.66 seconds
2020.06.15-19:10:44.689 info [caliper] [ethereum.js] Creating contracts...
2020.06.15-19:10:47.745 info [caliper] [ethereum.js] Deployed contract simple at 0x629F72C7B127bc4EEdB524a07f44a8C8d895
2020.06.15-19:10:47.746 info [caliper] [caliper-engine] Executed "install" step in 3.058 seconds
2020.06.15-19:10:47.747 info [caliper] [messenger.js] Creating messenger of type "process-master"
2020.06.15-19:10:47.751 info [caliper] [null-or-orchestrator] Configured messenger of type "process-master"
2020.06.15-19:10:47.757 info [caliper] [round-orchestrator] Monitors successfully started
2020.06.15-19:10:47.758 info [caliper] [round-orchestrator] Started round 1 (open)

```

```

2020.06.15-19:10:52.780 info [caliper] [worker-orchestrator] Waiting for 1 workers to be assigned...
2020.06.15-19:10:52.782 info [caliper] [worker-orchestrator] 1 workers assigned, progressing to worker initialization phase.
2020.06.15-19:10:52.783 info [caliper] [worker-orchestrator] Waiting for workers to be ready...
2020.06.15-19:10:52.785 info [caliper] [message-handler] Handling "init" message
2020.06.15-19:10:52.801 info [caliper] [worker-orchestrator] Handled successful "init" message for worker 0
2020.06.15-19:10:52.803 info [caliper] [worker-orchestrator] 1 workers ready, progressing to test preparation phase.
2020.06.15-19:10:52.804 info [caliper] [message-handler] Handling "prepare" message
2020.06.15-19:10:54.879 info [caliper] [caliper-local-client.js] Info: client 0 prepare test :opening accountsphase starting...
2020.06.15-19:10:57.808 info [caliper] [caliper-local-client.js] Initialization ongoing...
2020.06.15-19:10:57.809 info [caliper] [caliper-local-client.js] Info: client 0 start test :opening accountsphase complete
2020.06.15-19:10:59.884 info [caliper] [message-handler] Handled successful "prepare" message for worker 0 and test round 0
2020.06.15-19:10:59.886 info [caliper] [worker-orchestrator] 1 workers prepared, progressing to test phase.
2020.06.15-19:10:59.890 info [caliper] [message-handler] Handling "test" message
2020.06.15-19:10:59.896 info [caliper] [caliper-local-client.js] txUpdateTime: 5000
2020.06.15-19:10:59.901 info [caliper] [caliper-local-client.js] Info: client 0 start test runFixedNumber():opening accounts
2020.06.15-19:10:59.908 info [caliper] [message-handler] Handled "test" message for worker 0
2020.06.15-19:10:08.265 info [caliper] [report-builder] ### Test result ***
2020.06.15-19:10:08.228 info [caliper] [report-builder]

+-----+-----+-----+-----+-----+
| Name | Succ | Fail | Send Rate (TPS) | Max Latency (s) | Min Latency (s) | Avg Latency (s) | Throughput (TPS) |
+-----+-----+-----+-----+-----+-----+
| open | 100 | 0 | 50.6 | 7.08 | 3.02 | 6.41 | 12.4 |
+-----+-----+-----+-----+-----+-----+-----+-----+
2020.06.15-19:11:08.237 info [caliper] [round-orchestrator] Finished round 1 (open) in 8.09 seconds
2020.06.15-19:11:08.238 info [caliper] [round-orchestrator] Waiting 5 seconds for the next round...
2020.06.15-19:11:13.240 info [caliper] [round-orchestrator] Started round 2 (query)
2020.06.15-19:11:13.242 info [caliper] [worker-orchestrator] Existing 1 connected workers detected, progressing to worker assignment phase.
2020.06.15-19:11:13.243 info [caliper] [worker-orchestrator] Existing 1 connected workers detected are assigned, progressing to worker initialization phase.
2020.06.15-19:11:13.243 info [caliper] [worker-orchestrator] Existing 1 prepared workers detected, progressing to test preparation phase.
2020.06.15-19:11:13.246 info [caliper] [message-handler] Handling "prepare" message
2020.06.15-19:11:13.965 info [caliper] [caliper-local-client.js] Info: client 0 prepare test :querying accountsphase starting...
2020.06.15-19:11:18.256 info [caliper] [caliper-local-client.js] Initialization ongoing...
2020.06.15-19:11:18.966 info [caliper] [caliper-local-client.js] Info: client 0 prepare test :querying accountsphase complete
2020.06.15-19:11:18.968 info [caliper] [message-handler] Handled successful "prepare" message for worker 0 and test round 1
2020.06.15-19:11:18.970 info [caliper] [worker-orchestrator] 1 workers prepared, progressing to test phase.
2020.06.15-19:11:18.973 info [caliper] [message-handler] Handling "test" message
2020.06.15-19:11:18.975 info [caliper] [caliper-local-client.js] txUpdateTime: 5000
2020.06.15-19:11:18.976 info [caliper] [caliper-local-client.js] Info: client 0 start test runFixedNumber():querying accounts
2020.06.15-19:11:20.183 info [caliper] [message-handler] Handled "test" message for worker 0
2020.06.15-19:11:20.187 info [caliper] [report-builder] ### Test result ***
2020.06.15-19:11:20.194 info [caliper] [report-builder]

```

```

2020.06.15-19:11:25.201 info [caliper] [worker-orchestrator] Existing 1 connected workers detected are assigned, progressing to worker initialization phase.
2020.06.15-19:11:25.202 info [caliper] [worker-orchestrator] Existing 1 prepared workers detected, progressing to test preparation phase.
2020.06.15-19:11:25.204 info [caliper] [message-handler] Handling "prepare" message
2020.06.15-19:11:25.910 info [caliper] [caliper-local-client.js] Info: client 0 prepare test :transferring moneyphase starting...
2020.06.15-19:11:30.226 info [caliper] [caliper-local-client.js] Initialization ongoing...
2020.06.15-19:11:30.918 info [caliper] [caliper-local-client.js] Info: client 0 prepare test :transferring moneyphase complete
2020.06.15-19:11:30.919 info [caliper] [message-handler] Handled successful "prepare" message for worker 0 and test round 2
2020.06.15-19:11:30.921 info [caliper] [worker-orchestrator] 1 workers prepared, progressing to test phase.
2020.06.15-19:11:30.923 info [caliper] [message-handler] Handling "test" message
2020.06.15-19:11:30.925 info [caliper] [caliper-local-client.js] txUpdateTime: 5000
2020.06.15-19:11:30.926 info [caliper] [caliper-local-client.js] Info: client 0 start test runFixedNumber():transferring money
2020.06.15-19:11:38.208 info [caliper] [message-handler] Handled "test" message for worker 0
2020.06.15-19:11:38.210 info [caliper] [report-builder] ### Test result ***
2020.06.15-19:11:38.213 info [caliper] [report-builder]

+-----+-----+-----+-----+-----+
| Name | Succ | Fail | Send Rate (TPS) | Max Latency (s) | Min Latency (s) | Avg Latency (s) | Throughput (TPS) |
+-----+-----+-----+-----+-----+-----+
| transfer | 100 | 0 | 50.5 | 7.02 | 5.01 | 5.60 | 14.1 |
+-----+-----+-----+-----+-----+-----+-----+
2020.06.15-19:11:38.215 info [caliper] [round-orchestrator] Finished round 3 (transfer) in 7.079 seconds
2020.06.15-19:11:38.215 info [caliper] [report-builder] ### All test results ***
2020.06.15-19:11:38.222 info [caliper] [report-builder]

+-----+-----+-----+-----+-----+
| Name | Succ | Fail | Send Rate (TPS) | Max Latency (s) | Min Latency (s) | Avg Latency (s) | Throughput (TPS) |
+-----+-----+-----+-----+-----+-----+
| open | 100 | 0 | 50.6 | 7.08 | 3.02 | 6.41 | 12.4 |
| query | 100 | 0 | 101.2 | 0.01 | 0.00 | 0.01 | 100.5 |
| transfer | 100 | 0 | 50.5 | 7.02 | 5.01 | 5.60 | 14.1 |
+-----+-----+-----+-----+-----+-----+-----+
2020.06.15-19:11:38.254 info [caliper] [caliper-flow] Generated report with path /home/manishkumar/Desktop/caliper-benchmarks/report.html
2020.06.15-19:11:38.357 info [caliper] [message-handler] Handling "exit" message
2020.06.15-19:11:38.358 info [caliper] [round-orchestrator] Benchmark finished in 50.6 seconds. Total rounds: 3. Successful rounds: 3. Fall ed rounds: 0.
2020.06.15-19:11:38.359 info [caliper] [caliper-engine] Network configuration attribute "caliper.command.end" is not present, skipping end command
2020.06.15-19:11:38.359 info [caliper] [cli-launch-master] Benchmark successfully finished
manishkumar@ULTRASPIRE-LAP268:~/Desktop/caliper-benchmarks$ exit

```