



PRIVATE ETHEREUM NETWORK LAB ASSIGNMENT



PART 1. NETWORK CONFIGURATION

```
C:\Windows\System32\cmd.exe - geth --datadir node1 --unlock "85cA0dEbC050Ed35E109D53Bb7832D07938A378c" --mine --rpc --allow-insecure-unlock
Microsoft Windows [Version 10.0.19042.1348]
(c) Microsoft Corporation. All rights reserved.

C:\Users\RM\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6>geth --datadir ./node1 account new
INFO [12-16|09:57:37.695] Maximum peer count ETH=50 LES=0 total=50
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: 0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
Path of the secret key file: node1\keystore\UTC--2021-12-16T06-57-44.317309100Z--85ca0debcb050ed35e109d53bb7832d07938a378c

- 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!

C:\Users\RM\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6>geth --datadir ./node2 account new
INFO [12-16|09:59:02.029] Maximum peer count ETH=50 LES=0 total=50
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: 0xA57059bDF8337C8433716f2243bde8a453f3A9BC
Path of the secret key file: node2\keystore\UTC--2021-12-16T06-59-07.129563800Z--a57059bdf8337c8433716f2243bde8a453f3a9bc

- 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!

C:\Users\RM\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6>geth --datadir ./node3 account new
INFO [12-16|10:02:01.502] Maximum peer count ETH=50 LES=0 total=50
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: 0x3146D58E2D2e7A779D76E3515a00885bdf4f74d8
Path of the secret key file: node3\keystore\UTC--2021-12-16T07-02-04.935650100Z--3146d58e2d2e7a779d76e3515a00885bdf4f74d8

- 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!
```

PART 2. LAUNCHING OUR NETWORK

```
C:\Windows\System32\cmd.exe - geth --datadir node1 --unlock "85cA0dEbC050Ed35E109D53Bb7832D07938A378c" --mine --rpc --allow-insecure-unlock

C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6\geth-alltools-windows-amd64-1.9.7-a718daa6>geth --datadir node1 --unlock "85cA0dEbC050Ed35E109D53Bb7832D07938A378c" --mine --rpc --allow-insecure-unlock
[12-16]10:32:19.287] Bumping default cache on mainnet provided=1024 updated=4096
WARN [12-16]10:32:19.304] Sanitizing cache to Go's GC limits provided=4096 updated=1321
INFO [12-16]10:32:19.312] Maximum peer count ETH=50 LES=0 total=50
INFO [12-16]10:32:19.776] Starting peer-to-peer node instance=geth/v1.9.7-stable-a718daa6/windows-amd64/go1.13.4
INFO [12-16]10:32:19.832] Allocated trie memory caches clear=300.00MiB dirty=300.00MiB
INFO [12-16]10:32:19.884] Allocated cache and file handles database=C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6\geth-alltools-windows-amd64-1.9.7-a718daa6\node1\geth\chaindata cache=660.0MiB handles=8192
INFO [12-16]10:32:20.986] Opened ancient database database=C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6\geth-alltools-windows-amd64-1.9.7-a718daa6\node1\geth\chaindata\ancient
INFO [12-16]10:32:21.006] Initialised chain configuration config="{ChainID: 1313 Homestead: 0 DAO: <nil> DAOSupport: false EIP150: 0 EIP155: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: 0 Engin er clique}"
INFO [12-16]10:32:21.090] Initialising Ethereum protocol versions="[64 63]" network=1 dbversion=<nil>
WARN [12-16]10:32:21.104] Upgrade blockchain database version from=<nil> to=7
INFO [12-16]10:32:21.475] Loaded most recent local header number=0 hash=bb2714..827a06 td=1 age=26m5s
INFO [12-16]10:32:21.510] Loaded most recent local full block number=0 hash=bb2714..827a06 td=1 age=26m5s
INFO [12-16]10:32:21.539] Loaded most recent local fast block number=0 hash=bb2714..827a06 td=1 age=26m5s
INFO [12-16]10:32:21.592] Regenerated local transaction journal transactions=0 account=0
INFO [12-16]10:32:21.789] Allocated fast sync bloom size=660.00MiB
INFO [12-16]10:32:21.850] Initialized fast sync bloom items=4 errorrate=0.000 elapsed=31.915ms
INFO [12-16]10:32:22.213] Stored checkpoint snapshot to disk number=0 hash=bb2714..827a06
INFO [12-16]10:32:22.820] New local node record seq=1 id=013cc9b7356ca1a ip=127.0.0.1 udp=30303 tcp=30303
INFO [12-16]10:32:23.054] Started P2P networking self=enode://9e3089de5c103ad0f0960bf8cf7b5c029cc9b13556c063475041cff47a81de31cda32b8403fb283d9b2b3bf7455e6f7048b9cc8f4e31885663711842da89b4d@127.0.0.1:30303


INFO [12-16]10:32:23.441] IPC endpoint opened url=\\\\.\\pipe\\geth.ipc
INFO [12-16]10:32:23.505] HTTP endpoint opened url=http://127.0.0.1:8545 cors= vhosts=localhost
Unlocking account 85cA0dEbC050Ed35E109D53Bb7832D07938A378c | Attempt 1/3
Password:
INFO [12-16]10:32:25.000] New local node record seq=2 id=013cc9b7356ca1a ip=95.186.31.133 udp=1821 tcp=30303
INFO [12-16]10:32:25.329] Unlocked account address=0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
INFO [12-16]10:32:25.446] Transaction pool price threshold updated price=1000000000
INFO [12-16]10:32:25.452] Transaction pool price threshold updated price=1000000000
INFO [12-16]10:32:25.459] Etherbase automatically configured address=0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
INFO [12-16]10:32:25.854] Commit new mining work number=1 sealhash=6d6ce6..a0b1f9 uncles=0 txs=0 gas=0 fees=0 elapsed=359.231ms
INFO [12-16]10:32:28.754] Successfully sealed new block number=1 sealhash=6d6ce6..a0b1f9 hash=9919d2..22fd28 elapsed=3.035s
INFO [12-16]10:32:29.370] 0 mined potential block number=1 hash=9919d2..22fd28
INFO [12-16]10:32:29.372] Signed recently, must wait for others
INFO [12-16]10:32:29.519] Commit new mining work number=2 sealhash=cb9766..2be1f8 uncles=0 txs=0 gas=0 fees=0 elapsed=147.689ms
INFO [12-16]11:32:23.719] Regenerated local transaction journal transactions=0 account=0
INFO [12-16]12:32:22.281] Regenerated local transaction journal transactions=0 account=0
INFO [12-16]13:32:22.132] Regenerated local transaction journal transactions=0 account=0
INFO [12-16]13:37:46.112] Setting new local account address=0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
INFO [12-16]13:37:46.365] Submitted transaction fullhash=0x964556704456cb08796677fb16af2c5eb8fb28298ab64fd13049e781c16c784ab recipient=0xd07900341049ff252888694767e527fc3EE78760
INFO [12-16]13:37:47.708] Signed recently, must wait for others
INFO [12-16]13:37:47.716] Commit new mining work number=2 sealhash=321fa4..a2765e uncles=0 txs=1 gas=21000 fees=2.1e-05 elapsed=609.210ms
INFO [12-16]13:52:53.060] Block synchronisation started
INFO [12-16]13:52:53.260] Mining aborted due to sync
WARN [12-16]13:52:53.491] Synchronisation failed, dropping peer
INFO [12-16]13:52:53.498] Commit new mining work peer=268bb2e276ed65074 err="action from bad peer ignored"
INFO [12-16]13:52:53.498] Signed recently, must wait for others number=2 sealhash=7a6c40..72d6fc uncles=0 txs=0 gas=0 fees=0 elapsed=994.8µs
INFO [12-16]13:52:53.665] Commit new mining work
INFO [12-16]13:52:53.665] Signed recently, must wait for others number=2 sealhash=1e7645..e7c122 uncles=0 txs=1 gas=21000 fees=2.1e-05 elapsed=168.525ms
INFO [12-16]14:30:54.954] Submitted transaction fullhash=0x8d02b68ad235fd299881c0a1c8cb2767d22d589409a340e8f43f8f78e0e35050 recipient=0xd07900341049ff252888694767e527fc3EE78760
INFO [12-16]14:30:56.595] Signed recently, must wait for others
```

PART 2. LAUNCHING OUR NETWORK


```
C:\Windows\System32\cmd.exe - geth --datadir ./node2 --unlock "A57059bDF8337C8433716f2243bde8a453f3A9BC" --ipcdisable --mine --port 30304 --bootnodes enode://9e3009de5c103adf0960bf8fc7b5c029ccb913556c06347...
Microsoft Windows [Version 10.0.19042.1348]
(c) Microsoft Corporation. All rights reserved.

C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6\geth-alltools-windows-amd64-1.9.7-a718daa6>geth --datadir ./node2 --unlock "A57059bDF8337C8433716f2243bde8a453f3A9BC" --ipcdisable --mine --port 30304 --bootnodes enode://9e3009de5c103adf0960bf8fc7b5c029ccb913556c063475041cfff47a81de31cda32b8403ffeb8c32d9b2b3bf7455e6f7048b9cc8f4e31885663711842da89b4@127.0.0.1:30303
INFO [12-16|10:51:53.370] Bumping default cache on mainnet      provided=1024 updated=4096
WARN [12-16|10:51:53.384] Sanitizing cache to Go's GC limits    provided=4096 updated=1321
INFO [12-16|10:51:53.412] Maximum peer count                    ETH=50 LES=0 total=50
INFO [12-16|10:51:53.549] Starting peer-to-peer node           instance=Geth/v1.9.7-stable-a718daa6/windows-amd64/go1.13.4
INFO [12-16|10:51:53.558] Allocated trie memory caches        clean=330.00MiB dirty=330.00MiB
INFO [12-16|10:51:53.568] Allocated cache and file handles    database=C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6\geth-alltools-windows-amd64-1.9.7-a718daa6\node2\geth\chaindata cache=660.00MiB handles=8192
INFO [12-16|10:51:54.183] Opened ancient database              database=C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-a718daa6\geth-alltools-windows-amd64-1.9.7-a718daa6\node2\geth\chaindata\ancient
INFO [12-16|10:51:54.212] Initialised chain configuration      config="{ChainID: 1313 Homestead: 0 DAO: <nil> DAOsupport: false EIP150: 0 EIP155: 0 EIP158: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: 0 Engine: clique}"
INFO [12-16|10:51:54.245] Initialising Ethereum protocol      versions="[64 63]" network=1 dbversion=<nil>
WARN [12-16|10:51:54.262] Upgrade blockchain database version  from=<nil> to=7
INFO [12-16|10:51:54.699] Loaded most recent local header     number=0 hash=bb2714...827a06 td=1 age=45m38s
INFO [12-16|10:51:54.717] Loaded most recent local full block number=0 hash=bb2714...827a06 td=1 age=45m38s
INFO [12-16|10:51:54.747] Loaded most recent local fast block number=0 hash=bb2714...827a06 td=1 age=45m38s
INFO [12-16|10:51:54.762] Regenerated local transaction journal transactions=0 accounts=0
INFO [12-16|10:51:54.828] Allocated fast sync bloom           size=660.00MiB
INFO [12-16|10:51:54.835] Initialized fast sync bloom         items=4 errorrate=0.000 elapsed=998.1µs
INFO [12-16|10:51:54.904] Stored checkpoint snapshot to disk  number=0 hash=bb2714...827a06
INFO [12-16|10:51:55.126] New local node record               seq=1 id=80d663ac7f319bb9 ip=127.0.0.1 udp=30304 tcp=30304
INFO [12-16|10:51:55.166] Started P2P networking              self=enode://a1beb5724014433241d3e0cfdc63baebe858e40a30f8fa93a4ceee1fd77f745f8cf708a3babfbf44fdd7aa6d00bde7770adad477bcba96489461492143207b3@127.0.0.1Unlocking account A57059bDF8337C8433716f2243bde8a453f3A9BC | Attempt 1/3
:3030Password: 4
INFO [12-16|10:51:58.288] New local node record               seq=2 id=80d663ac7f319bb9 ip=95.186.31.133 udp=1256 tcp=30304
INFO [12-16|10:52:05.191] Block synchronisation started
INFO [12-16|10:52:05.366] Imported new block headers          count=1 elapsed=14.437ms number=1 hash=9919d2...22fd28 age=19m40s
INFO [12-16|10:52:05.396] Imported new chain segment          blocks=1 txs=0 mgas=0.000 elapsed=0s          mgasps=NaN number=1 hash=9919d2...22fd28 age=19m40s dirty=0.00B
INFO [12-16|10:52:05.469] Fast sync complete, auto disabling transactions=0 accounts=0
INFO [12-16|11:51:59.045] Regenerated local transaction journal transactions=0 accounts=0
INFO [12-16|12:51:54.881] Regenerated local transaction journal transactions=0 accounts=0
INFO [12-16|13:51:55.717] Regenerated local transaction journal transactions=0 accounts=0
```

PART 3. CONNECTING FROM METAMASK

 METAMASK

Ethereum Mainnet



Settings

General

Advanced

Contacts

Security & Privacy

Alerts

Networks

Experimental

About

Ethereum Mainnet

Ropsten Test Network

Rinkeby Test Network

Goerli Test Network

Kovan Test Network

Localhost 8545

rwnet

RW

Network Name

rwnet

New RPC URL

http://127.0.0.1:8545

Chain ID ⓘ

1313

Currency Symbol (Optional)

ETH

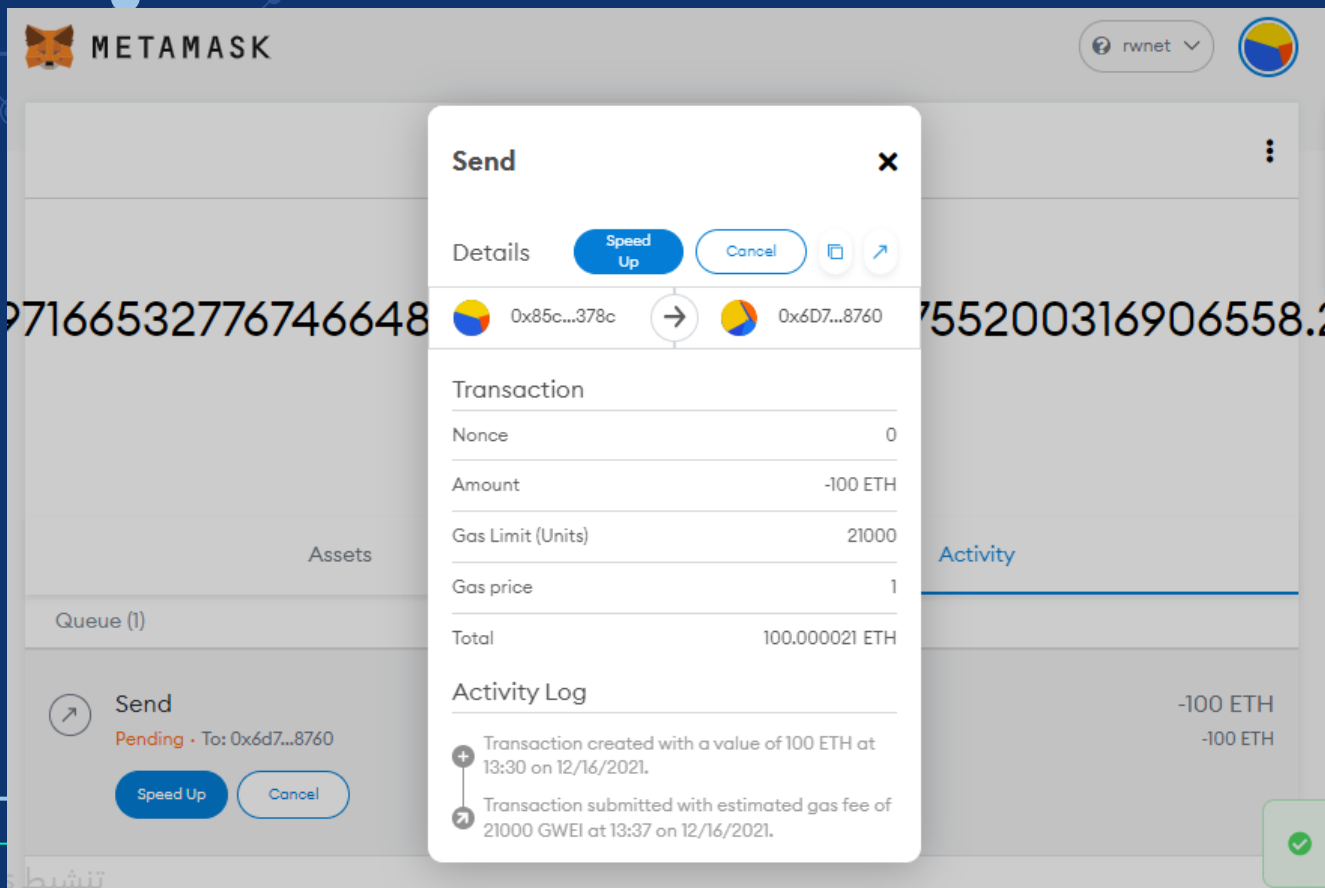
Block Explorer URL (Optional)

Delete

Cancel

Save

PART 3. CONNECTING FROM METAMASK



PART 3. CONNECTING FROM METAMASK

```
C:\Windows\System32\cmd.exe - geth --datadir node1 --unlock "85cA0dEbC050Ed35E109D53Bb7832D07938A378c" --mine --rpc --allow-insecure-unlock

0M18 2018-08-19 12:16:20.986 INFO [12-16]10:32:20.986] Opened ancient database
12-16 10:32:21.006 INFO [12-16]10:32:21.006] Initialised chain configuration
e: clique]
12-16 10:32:21.090 INFO [12-16]10:32:21.090] Initialising Ethereum protocol
WARN [12-16]10:32:21.104] Upgrade blockchain database version
12-16 10:32:21.475 INFO [12-16]10:32:21.475] Loaded most recent local header
12-16 10:32:21.510 INFO [12-16]10:32:21.510] Loaded most recent local full block
12-16 10:32:21.539 INFO [12-16]10:32:21.539] Loaded most recent local fast block
12-16 10:32:21.599 INFO [12-16]10:32:21.599] Regenerated local transaction journal
12-16 10:32:21.789 INFO [12-16]10:32:21.789] Allocated fast sync bloom
12-16 10:32:21.859 INFO [12-16]10:32:21.859] Initialized fast sync bloom
12-16 10:32:22.213 INFO [12-16]10:32:22.213] Stored checkpoint snapshot to disk
12-16 10:32:22.820 INFO [12-16]10:32:22.820] New local node record
12-16 10:32:23.054 INFO [12-16]10:32:23.054] Started P2P networking

12-16 10:32:23.441 INFO [12-16]10:32:23.441] IPC endpoint opened
12-16 10:32:23.595 INFO [12-16]10:32:23.595] HTTP endpoint opened
Unlocking account 85cA0dEbC050Ed35E109D53Bb7832D07938A378c | Attempt 1/3
Password:
12-16 10:32:25.008 INFO [12-16]10:32:25.008] New local node record
12-16 10:32:25.329 INFO [12-16]10:32:25.329] Unlocked account
12-16 10:32:25.446 INFO [12-16]10:32:25.446] Transaction pool price threshold updated
12-16 10:32:25.452 INFO [12-16]10:32:25.452] Transaction pool price threshold updated
12-16 10:32:25.459 INFO [12-16]10:32:25.459] Database automatically configured
12-16 10:32:25.854 INFO [12-16]10:32:25.854] Commit new mining work
12-16 10:32:28.754 INFO [12-16]10:32:28.754] Successfully sealed new block
12-16 10:32:29.370 INFO [12-16]10:32:29.370] Mined potential block
12-16 10:32:29.372 INFO [12-16]10:32:29.372] Signed recently, must wait for others
12-16 10:32:29.519 INFO [12-16]10:32:29.519] Commit new mining work
12-16 11:32:23.719 INFO [12-16]11:32:23.719] Regenerated local transaction journal
12-16 12:32:22.281 INFO [12-16]12:32:22.281] Regenerated local transaction journal
12-16 13:32:22.132 INFO [12-16]13:32:22.132] Regenerated local transaction journal
12-16 13:37:46.112 INFO [12-16]13:37:46.112] Setting new local account
12-16 13:37:46.365 INFO [12-16]13:37:46.365] Submitted transaction
12-16 13:37:47.780 INFO [12-16]13:37:47.780] Signed recently, must wait for others
12-16 13:37:47.716 INFO [12-16]13:37:47.716] Commit new mining work
12-16 13:52:53.060 INFO [12-16]13:52:53.060] Block synchronisation started
12-16 13:52:53.260 INFO [12-16]13:52:53.260] Mining aborted due to sync
WARN [12-16]13:52:53.491] Synchronisation failed, dropping peer
12-16 13:52:53.498 INFO [12-16]13:52:53.498] Commit new mining work
12-16 13:52:53.498 INFO [12-16]13:52:53.498] Signed recently, must wait for others
12-16 13:52:53.665 INFO [12-16]13:52:53.665] Commit new mining work
12-16 13:52:53.665 INFO [12-16]13:52:53.665] Signed recently, must wait for others
12-16 14:30:54.954 INFO [12-16]14:30:54.954] Submitted transaction
12-16 14:30:56.595 INFO [12-16]14:30:56.595] Signed recently, must wait for others
12-16 14:30:56.603 INFO [12-16]14:30:56.603] Commit new mining work
12-16 14:32:21.690 INFO [12-16]14:32:21.690] Regenerated local transaction journal

database=C:\Users\RW\Downloads\geth-alltools-windows-amd64-1.9.7-8718daa6\geth-alltools-windows-amd64-1.9.7-8718daa6\node1\geth\chaindata\ancient
config={\"ChainID\": 1313 Homestead; 0 DAO; <nill> DAOsupport: false EIP150: 0 EIP155: 0 EIP158: 0 Byzantium; 0 Constantinople; 0 Petersburg; 0 Engin
versions=[\"64 63\"] network=1 dbversion=<nill>
from=<nill> to=7
number=0 hash=bb2714_827a06 td=1 age=26m5s
number=0 hash=bb2714_827a06 td=1 age=26m5s
number=0 hash=bb2714_827a06 td=1 age=26m5s
transaction=0 accounts=0
size=660.00M18
items=4 errorRate=0.000 elapsed=31.915ms
number=0 hash=bb2714_827a06
seq=1 id=013cc9b73356c1a ip=127.0.0.1 udp=30303 tcp=30303
self=enode://9e3089d5c103adf0960bf8fc7b5c029ccb913556c063475041cfff478a1de31cda32b8403ffeb8c3d29b2b3bf7455e6f7048b9cc8f4e31885663711842da89b4e127.0.0.1:30303

url=\\\\\\\\\\\\\\\\pipe\\\\geth.ipc
url=http://127.0.0.1:8545 cors= vhosts=localhost

seq=2 id=013cc9b73356c1a ip=95.186.31.133 udp=1821 tcp=30303
address=0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
price=1000000000
price=1000000000
address=0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
number=1 sealhash=6d6ce6_a0b1f9 uncles=0 txs=0 gas=0 fees=0 elapsed=359.231ms
number=1 sealhash=6d6ce6_a0b1f9 hash=9919d2_22fd28 elapsed=3.035s
number=1 hash=9919d2_22fd28

number=2 sealhash=cb9766_2be1f8 uncles=0 txs=0 gas=0 fees=0 elapsed=147.689ms
transactions=0 accounts=0
number=0 hash=bb2714_827a06 td=1 age=26m5s
transaction=0 accounts=0
address=0x85cA0dEbC050Ed35E109D53Bb7832D07938A378c
fullhash=0x964556704456cb79e6f77b16af2c5eb8fb2898ab64fd13049e781c16c784ab recipient=0x607900341049Ff252888694767e527Fc3EE78760

number=2 sealhash=321fa4_a2765e uncles=0 txs=1 gas=21000 fees=2.1e-05 elapsed=609.210ms

peer=268b2e276ed65074 err= \"action from bad peer ignored\"
number=2 sealhash=7a6c40_72d6fc uncles=0 txs=0 gas=0 fees=0 elapsed=994.8µs

number=2 sealhash=1e7645_e7c122 uncles=0 txs=1 gas=21000 fees=2.1e-05 elapsed=168.525ms

fullhash=0x80d2b86ad235fb299881c0a1c8b2767d22589409a340ebf43f8f78e0e335050 recipient=0x607900341049Ff252888694767e527Fc3EE78760

number=2 sealhash=5ab7cc_5db7f5 uncles=0 txs=2 gas=42000 fees=4.2e-05 elapsed=213.998ms
transactions=2 accounts=1
```

A person's face and hands are visible in the background, interacting with a futuristic digital interface. The interface features glowing blue lines, circular progress indicators, and various geometric shapes. A large, dark blue rectangular box with a thin red border is centered in the foreground, containing the word "THANKS!" in bold red capital letters.

THANKS!