

Setting up Nodes

Displaying Public Key Address and path of the secret key

```
Cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/BlockChain_02
$ geth --datadir node1 account new
INFO [02-01|13:51:56.701] 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:  0xf98EA25E569c4bF4F7Df8d42cC3a15F418BD3906
Path of the secret key file: node1\keystore\UTC--2021-02-01T18-52-11.376914100Z--f98ea25e569c4bf4f7df8d42cc3a15f418bd3906

- 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!

Cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/BlockChain_02
$ geth --datadir node2 account new
INFO [02-01|13:52:33.590] 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:  0x233899c7f3491A09275f28cc91F5Ae500984b00E
Path of the secret key file: node2\keystore\UTC--2021-02-01T18-52-38.929022900Z--233899c7f3491a09275f28cc91f5ae500984b00e

- 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!
```

Running puppeth

Setting up huntbank network

Creating genesis for proof-of-authority

```
Cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/BlockChain_02
$ 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)
> huntbank

Sweet, you can set this via --network=huntbank next time!

[32mINFO [0m[02-01|13:53:47.275] Administering Ethereum network      [32mname[0m=huntbank
[33mWARN [0m[02-01|13:53:47.280] No previous configurations found   [33mpath[0m=C:\Users\Cash\.puppeth\huntbank

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)
> 15
```

Listing accounts to seal and pre-fund

```
Which accounts are allowed to seal? (mandatory at least one)
> 0xf98EA25E569c4bF4F7Df8d42cC3a15F418BD3906
> 0x233899c7f3491A09275f28cc91F5Ae500984b00E
> 0x

Which accounts should be pre-funded? (advisable at least one)
> 0xf98EA25E569c4bF4F7Df8d42cC3a15F418BD3906
> 0x233899c7f3491A09275f28cc91F5Ae500984b00E
> 0x

Should the precompile-addresses (0x1 .. 0xff) be pre-funded with 1 wei? (advisable yes)
> no

Specify your chain/network ID if you want an explicit one (default = random)
>
[32mINFO [0m[02-01|13:55:01.060] 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
> 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 huntbank.json, huntbank-aleth.json, huntbank-harmony.json, huntbank-parity.json
>
[32mINFO [0m[02-01|13:55:16.812] Saved native genesis chain spec [32mpath[0m=huntbank.json
[31mERROR[0m[02-01|13:55:16.813] Failed to create Aleth chain spec [31merr[0m="unsupported consensus engine"
[31mERROR[0m[02-01|13:55:16.814] Failed to create Parity chain spec [31merr[0m="unsupported consensus engine"
[32mINFO [0m[02-01|13:55:16.818] Saved genesis chain spec [32mclient[0m=harmony [32mpath[0m=huntbank-harmony.json
```

Using Geth to initialize huntbank.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
> [35mCRIT[0m[02-01|13:55:23.754] Failed to read user input [35merr[0m=EOF

cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/BlockChain_02
$ geth --datadir node1 init huntbank.json
INFO [02-01|13:55:54.352] Maximum peer count ETH=50 LES=0 total=50
INFO [02-01|13:55:54.744] Set global gas cap cap=25000000
INFO [02-01|13:55:54.758] Allocated cache and file handles database="C:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\BlockChain_02\\node1\\geth\\chaindata" cache=16.00MiB handles=16
INFO [02-01|13:55:54.799] Writing custom genesis block
INFO [02-01|13:55:54.805] Persisted trie from memory database nodes=3 size=455.00B time=0s gcnodes=0 gcsz=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [02-01|13:55:54.820] Successfully wrote genesis state database=chaindata hash="5909c9-b07d7c"
INFO [02-01|13:55:54.833] Allocated cache and file handles database="C:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\BlockChain_02\\node1\\geth\\lightchaindata" cache=16.00MiB handles=16
INFO [02-01|13:55:54.874] Writing custom genesis block
INFO [02-01|13:55:54.879] Persisted trie from memory database nodes=3 size=455.00B time=0s gcnodes=0 gcsz=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [02-01|13:55:54.894] Successfully wrote genesis state database=lightchaindata hash="5909c9-b07d7c"

cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/BlockChain_02
$ geth --datadir node2 init huntbank.json
INFO [02-01|13:56:02.423] Maximum peer count ETH=50 LES=0 total=50
INFO [02-01|13:56:02.817] Set global gas cap cap=25000000
INFO [02-01|13:56:02.823] Allocated cache and file handles database="C:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\BlockChain_02\\node2\\geth\\chaindata" cache=16.00MiB handles=16
INFO [02-01|13:56:02.872] Writing custom genesis block
INFO [02-01|13:56:02.886] Persisted trie from memory database nodes=3 size=455.00B time=0s gcnodes=0 gcsz=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [02-01|13:56:02.906] Successfully wrote genesis state database=chaindata hash="5909c9-b07d7c"
INFO [02-01|13:56:02.920] Allocated cache and file handles database="C:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\BlockChain_02\\node2\\geth\\lightchaindata" cache=16.00MiB handles=16
INFO [02-01|13:56:02.963] Writing custom genesis block
INFO [02-01|13:56:02.968] Persisted trie from memory database nodes=3 size=455.00B time=0s gcnodes=0 gcsz=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [02-01|13:56:02.981] Successfully wrote genesis state database=lightchaindata hash="5909c9-b07d7c"
```

Sending transaction from Node 1 to Node 2

```
Cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/Blockchain_02
$ geth --datadir node1 --unlock "f98EA25E569c4bF4F7Df8d42cC3a15F418BD3906" --mine --rpc --allow-insecure-unlock
INFO [02-01|13:56:13.294] Starting Geth on Ethereum mainnet...
INFO [02-01|13:56:13.299] Bumping default cache on mainnet
WARN [02-01|13:56:13.318] Sanitizing cache to Go's GC limits
INFO [02-01|13:56:13.331] Maximum peer count
WARN [02-01|13:56:13.342] The flag --rpc is deprecated and will be removed in the future, please use --http
INFO [02-01|13:56:13.732] Set global gas cap
INFO [02-01|13:56:13.736] Allocated trie memory caches
INFO [02-01|13:56:13.757] Allocated cache and file handles
h\\chaindata" cache=1.32GiB handles=8192
INFO [02-01|13:56:13.855] Opened ancient database
h\\chaindata\\ancient"
INFO [02-01|13:56:13.870] Initialised chain configuration
tium: 0 Constantinople: 0 Petersburg: 0 Istanbul: 0, Muir Glacier:
INFO [02-01|13:56:13.933] Initialising Ethereum protocol
WARN [02-01|13:56:13.948] Upgrade blockchain database version
INFO [02-01|13:56:13.960] Loaded most recent local header
INFO [02-01|13:56:13.979] Loaded most recent local full block
INFO [02-01|13:56:13.985] Loaded most recent local fast block
INFO [02-01|13:56:14.021] Regenerated local transaction journal
INFO [02-01|13:56:14.095] Allocated fast sync bloom
INFO [02-01|13:56:14.100] Initialised fast sync bloom
INFO [02-01|13:56:14.101] Starting peer-to-peer node
INFO [02-01|13:56:14.101] Stored checkpoint snapshot to disk
INFO [02-01|13:56:14.178] New local node record
INFO [02-01|13:56:14.221] Started P2P networking
f6d080e6e90b2ed5c3658df4ab5988f18b1f567a90127.0.0.1:30303
INFO [02-01|13:56:14.221] IPC endpoint opened
INFO [02-01|13:56:14.319] HTTP server started
Unlocking account f98EA25E569c4bF4F7Df8d42cC3a15F418BD3906 | Attempt 1/3
INFO [02-01|13:56:14.322] Mapped network port
INFO [02-01|13:56:14.332] Mapped network port
INFO [02-01|13:56:14.469] New local node record
INFO [02-01|13:56:24.373] Looking for peers
INFO [02-01|13:56:34.511] Looking for peers
INFO [02-01|13:56:44.774] Looking for peers
INFO [02-01|13:56:54.847] Looking for peers
INFO [02-01|13:57:04.849] Looking for peers
INFO [02-01|13:57:14.879] Looking for peers
INFO [02-01|13:57:24.904] Looking for peers

provided=1024 updated=4096
provided=4096 updated=2699
ETH=50 LES=0 total=50
cap=25000000
clean=673.00MiB dirty=674.00MiB
database="c:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\Blockchain_02\\node1\\get
database="c:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\Blockchain_02\\node1\\get
config="{ChainID: 30663 Homestead: 0 DAO: <nil> DAOsupport: false EIP150: 0 EIP155: 0 EIP158: 0 Byzan
<nil>, YOLO v2: <nil>, Engine: clique}"
versions="[65 64 63]" network=1 dbversion=<nil>
from=<nil> to=8
number=0 hash="5909c9..b07d7c" td=1 age=2m18s
number=0 hash="5909c9..b07d7c" td=1 age=2m18s
number=0 hash="5909c9..b07d7c" td=1 age=2m18s
transactions=0 accounts=0
size=1.32GiB
items=3 serverrate=0.000 elapsed=0s
instance=Geth/v1.9.25-stable-e7872729/windows-amd64/go1.15.6
number=0 hash="5909c9..b07d7c"
seq=1 id=f8d3edde8d8a498a ip=127.0.0.1 udp=30303 tcp=30303
self=enode://bf9cd6382982af218ab1485503013a3c536756ab1310c8643ac17a3388ac9e23013ef07f268250fb3b2dff83
uri=\\.\pipe\geth.ipc
endpoint=127.0.0.1:8545 cors= whosts=localhost
proto=tcp extport=30303 intport=30303 interface=NAT-PMP(192.168.1.1)
proto=udp extport=30303 intport=30303 interface=NAT-PMP(192.168.1.1)
seq=2 id=f8d3edde8d8a498a ip=69.132.3.23 udp=30303 tcp=30303
peercount=0 tried=44 static=0
peercount=0 tried=51 static=0
peercount=0 tried=48 static=0
peercount=1 tried=33 static=0
peercount=1 tried=28 static=0
peercount=1 tried=79 static=0
peercount=2 tried=49 static=0
```

```
INFO [02-01|14:01:17.174] Looking for peers
INFO [02-01|14:01:27.214] Looking for peers
INFO [02-01|14:01:32.718] Setting new local account
INFO [02-01|14:01:32.728] Submitted transaction
A09275F28cc91F5Ae50098400E
INFO [02-01|14:01:37.221] Looking for peers
INFO [02-01|14:01:47.268] Looking for peers
INFO [02-01|14:01:57.277] Looking for peers
INFO [02-01|14:02:07.312] Looking for peers
INFO [02-01|14:02:17.313] Looking for peers
INFO [02-01|14:02:27.318] Looking for peers
INFO [02-01|14:02:37.450] Looking for peers
INFO [02-01|14:02:47.504] Looking for peers
INFO [02-01|14:02:57.594] Looking for peers
INFO [02-01|14:03:07.759] Looking for peers
INFO [02-01|14:03:17.836] Looking for peers
INFO [02-01|14:03:27.837] Looking for peers
INFO [02-01|14:03:37.839] Looking for peers
INFO [02-01|14:03:48.022] Looking for peers
INFO [02-01|14:03:58.356] Looking for peers
INFO [02-01|14:04:08.357] Looking for peers
INFO [02-01|14:04:18.538] Looking for peers
INFO [02-01|14:04:28.539] Looking for peers
INFO [02-01|14:04:38.814] Looking for peers
INFO [02-01|14:04:48.871] Looking for peers
INFO [02-01|14:04:58.875] Looking for peers
INFO [02-01|14:05:09.028] Looking for peers
INFO [02-01|14:05:19.054] Looking for peers
INFO [02-01|14:05:29.055] Looking for peers
INFO [02-01|14:05:39.056] Looking for peers
INFO [02-01|14:05:49.387] Looking for peers
INFO [02-01|14:05:59.416] Looking for peers
INFO [02-01|14:06:09.421] Looking for peers
INFO [02-01|14:06:19.513] Looking for peers
INFO [02-01|14:06:29.749] Looking for peers
INFO [02-01|14:06:39.869] Looking for peers
INFO [02-01|14:06:50.084] Looking for peers
INFO [02-01|14:07:00.284] Looking for peers
INFO [02-01|14:07:10.285] Looking for peers
INFO [02-01|14:07:20.285] Looking for peers
INFO [02-01|14:07:30.286] Looking for peers
INFO [02-01|14:07:40.469] Looking for peers
INFO [02-01|14:07:50.471] Looking for peers
INFO [02-01|14:08:00.471] Looking for peers

peercount=2 tried=43 static=0
peercount=1 tried=22 static=0
address=0xf98EA25E569c4bF4F7Df8d42cC3a15F418BD3906
f285bdaa50 recipient=0x233899cf7f3491
peercount=1 tried=82 static=0
peercount=1 tried=50 static=0
peercount=1 tried=48 static=0
peercount=1 tried=54 static=0
peercount=1 tried=54 static=0
peercount=1 tried=46 static=0
peercount=1 tried=51 static=0
peercount=1 tried=58 static=0
peercount=2 tried=56 static=0
peercount=1 tried=40 static=0
peercount=1 tried=33 static=0
peercount=1 tried=81 static=0
peercount=2 tried=57 static=0
peercount=1 tried=63 static=0
peercount=1 tried=41 static=0
peercount=1 tried=60 static=0
peercount=1 tried=53 static=0
peercount=1 tried=60 static=0
peercount=1 tried=45 static=0
peercount=1 tried=42 static=0
peercount=2 tried=70 static=0
peercount=4 tried=57 static=0
peercount=2 tried=44 static=0
peercount=1 tried=30 static=0
peercount=1 tried=63 static=0
peercount=1 tried=45 static=0
peercount=1 tried=64 static=0
peercount=1 tried=58 static=0
peercount=2 tried=43 static=0
peercount=1 tried=36 static=0
peercount=1 tried=78 static=0
peercount=1 tried=40 static=0
peercount=1 tried=44 static=0
peercount=1 tried=40 static=0
peercount=1 tried=67 static=0
peercount=1 tried=57 static=0
peercount=1 tried=43 static=0
peercount=1 tried=49 static=0
peercount=2 tried=62 static=0
```

Node 2 setup to receive funds from Node 1

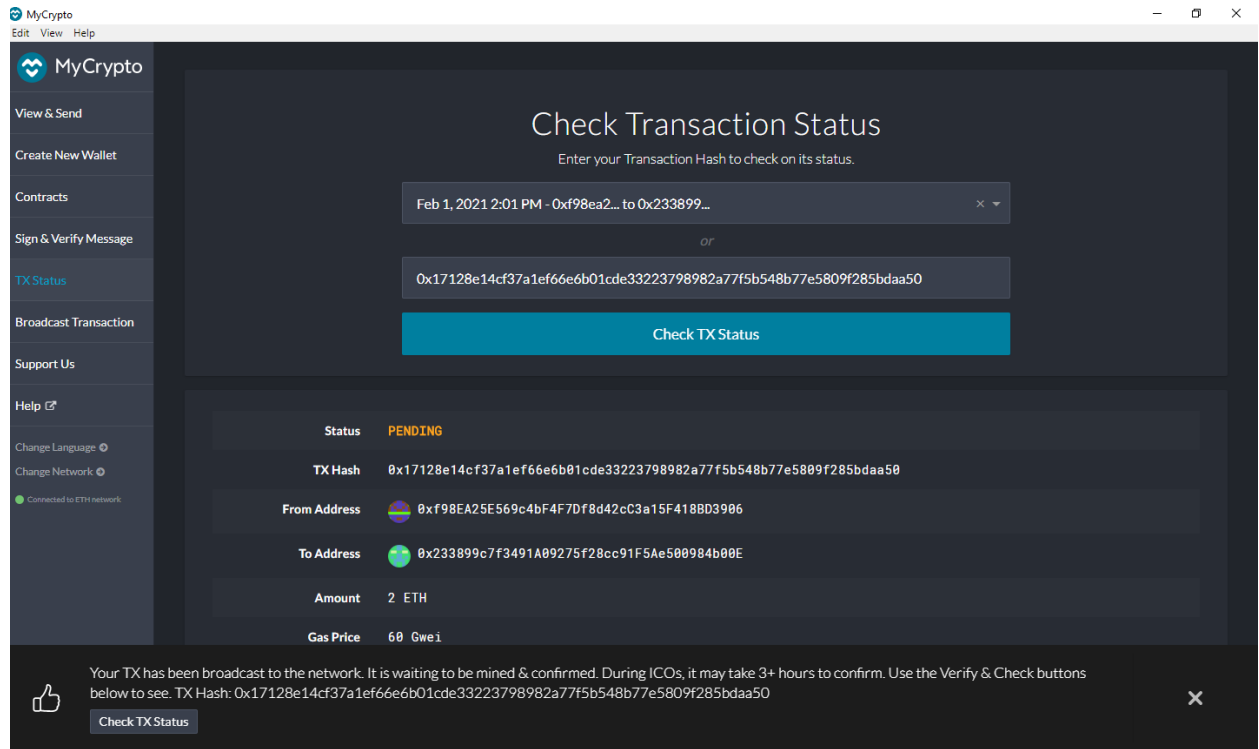
Peer to Peer Blockchain Transaction

```
Cash@DESKTOP-4V2GKV3 MINGW64 ~/Documents/Fintech Folder/Activities/Homework/Blockchain_02
$ geth --datadir node2 --unlock "233899c7f3491A09275f28cc91f5Ae500984b00E" --mine --port 30304 --bootnodes "enode://bf9cd6382982af218ab1485503013ac536756ab1310c8643ac17a3388ac9
23013ef07f268250fb3b2dfff83f6d080e60b2ed5c3658df4ab5988f18b1f567a9@127.0.0.1:30303" --ipcdisable --allow-insecure-unlock

INFO [02-01|13:56:48.801] Starting Geth on Ethereum mainnet...
INFO [02-01|13:56:48.810] Bumping default cache on mainnet
WARN [02-01|13:56:48.818] Sanitizing cache to Go's GC limits
INFO [02-01|13:56:48.836] Maximum peer count
INFO [02-01|13:56:49.176] Set global gas cap
INFO [02-01|13:56:49.182] Allocated trie memory caches
INFO [02-01|13:56:49.194] Allocated cache and file handles
INFO [02-01|13:56:49.332] Opened ancient database
INFO [02-01|13:56:49.348] Initialised chain configuration
Constantinople: 0 Petersburg: 0 Istanbul: 0 Muir Glacier: <nil>, YOLO v2: <nil>, Engine: clique)
INFO [02-01|13:56:49.365] Initialising Ethereum protocol
WARN [02-01|13:56:49.376] Upgrade blockchain database version
INFO [02-01|13:56:49.388] Loaded most recent local header
INFO [02-01|13:56:49.403] Loaded most recent local full block
INFO [02-01|13:56:49.410] Loaded most recent local fast block
INFO [02-01|13:56:49.422] Regenerated local transaction journal
INFO [02-01|13:56:49.483] Allocated fast sync bloom
INFO [02-01|13:56:49.492] Initialized fast sync bloom
INFO [02-01|13:56:49.493] Starting peer-to-peer node
INFO [02-01|13:56:49.493] Stored checkpoint snapshot to disk
INFO [02-01|13:56:49.553] New local node record
Unlocking account 233899c7f3491A09275f28cc91f5Ae500984b00E | Attempt 1/3
INFO Password: [02-01|13:56:49.591] Started P2P networking
754871721ffdb2a54a5ca44a61e9c3bae8991875@127.0.0.1:30304
INFO [02-01|13:56:49.712] Mapped network port
INFO [02-01|13:56:49.743] Mapped network port
INFO [02-01|13:56:50.604] New local node record
INFO [02-01|13:56:59.772] Looking for peers
INFO [02-01|13:57:09.893] Looking for peers
INFO [02-01|13:57:19.915] Looking for peers
INFO [02-01|13:57:30.149] Looking for peers
INFO [02-01|13:57:40.232] Looking for peers
INFO [02-01|13:57:50.285] Looking for peers
INFO [02-01|13:58:00.296] Looking for peers
INFO [02-01|13:58:10.325] Looking for peers
INFO [02-01|13:58:30.527] Looking for peers
INFO [02-01|13:58:40.617] Looking for peers
INFO [02-01|13:58:50.814] Looking for peers
INFO [02-01|13:59:00.824] Looking for peers
INFO [02-01|13:59:10.949] Looking for peers
INFO [02-01|13:59:20.949] Looking for peers
INFO [02-01|13:59:31.034] Looking for peers

provided=1024 updated=4096
provided=4096 updated=2699
ETH=50 LFS=0 total=50
cap=25000000
clean=673.00MiB dirty=674.00MiB
database="C:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\Blockchain_02\\node2\\geth\\chaind
ata"
database="C:\\Users\\Cash\\Documents\\Fintech Folder\\Activities\\Homework\\Blockchain_02\\node2\\geth\\chaind
ata\\ancient"
config="{ChainID: 30663 Homestead: 0 DAO: <nil> DAOsupport: false EIP150: 0 EIP155: 0 EIP158: 0 Byzantium: 0 C
versions="[65 64 63]" network=1 dbversion=<nil>
from=<nil> to=8
number=0 hash="5909c9..b07d7c" td=1 age=2m54s
number=0 hash="5909c9..b07d7c" td=1 age=2m54s
number=0 hash="5909c9..b07d7c" td=1 age=2m54s
transactions=0 accounts=0
size=1.32GiB
items=3 errorrate=0.000 elapsed=0s
instance=Geth/v1.0.25-stable-e7872729/windows-amd64/go1.15.6
number=0 hash="5909c9..b07d7c"
seq=1 id=c95a6680d9b888e0 ip=127.0.0.1 udp=30304 tcp=30304
self=enode://7eb361b071733c9b29fd89f982e45531744ea8997f4f6d5d58a2d24c51eb2851ef10be099f905e8769c48d6
proto=udp extport=30304 intport=30304 interface=NAT-PMP(192.168.1.1)
seq=2 id=c95a6680d9b888e0 ip=69.132.3.23 udp=30304 tcp=30304
peercount=1 tried=30 static=0
peercount=1 tried=25 static=0
peercount=1 tried=63 static=0
peercount=1 tried=41 static=0
peercount=1 tried=32 static=0
peercount=2 tried=68 static=0
peercount=1 tried=37 static=0
peercount=1 tried=60 static=0
peercount=1 tried=57 static=0
peercount=1 tried=46 static=0
peercount=1 tried=51 static=0
peercount=1 tried=46 static=0
peercount=1 tried=49 static=0
peercount=2 tried=49 static=0
peercount=1 tried=55 static=0
```

MyCrypto Node 1 to Node 2 Transaction Status



Chain ID

[illegible]