

Creating an Ethereum Instance on local machine at port number 8545

Start the Power Shell

Create a folder inside current folder as ebn for Ethereum Blockchain Node

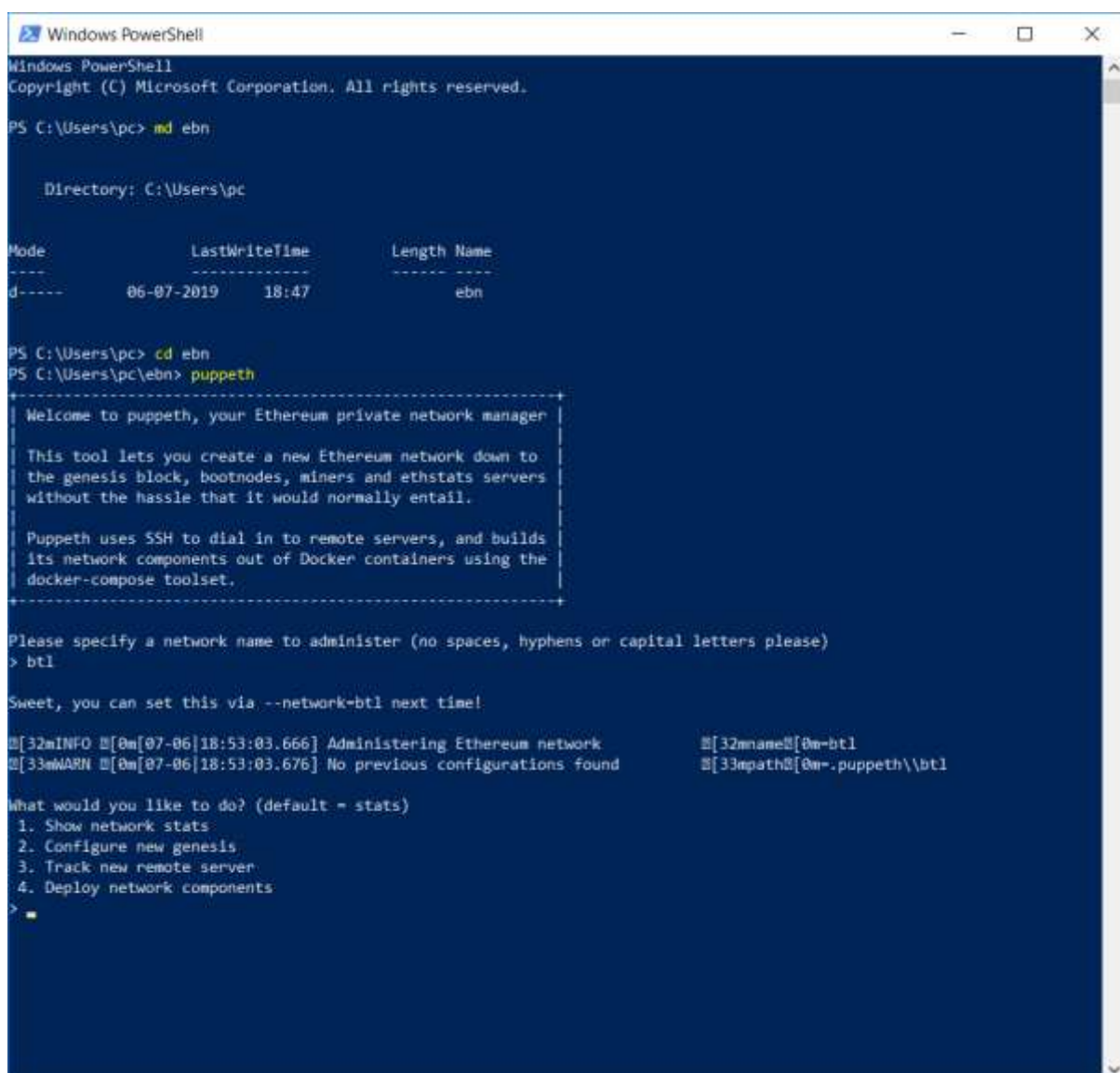
md ebn

Goto inside the created folder

cd ebn

Use the command line tool **puppeth** provided with geth to create the genesis block compatible with Ethereum Blockchain

Lets define the network name as btl for Blockchain TechQubator Lab



```
Windows PowerShell
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PS C:\Users\pc> md ebn

Directory: C:\Users\pc

Mode                LastWriteTime         Length Name
----                -
d-----         06-07-2019    18:47             ebn

PS C:\Users\pc> cd ebn
PS C:\Users\pc\ebn> 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)
> btl

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

[32mINFO [0m[07-06|18:53:03.666] Administering Ethereum network      [32mname[0m-btl
[33mWARN [0m[07-06|18:53:03.676] No previous configurations found   [33mpath[0m-.puppeth\bt1

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
```

Select choice 2 to configure new genesis block

Select choice 1 to create a new genesis block

Select choice 1 when asked for which consensus engine to use to select Proof-of-Work consensus algorithm

List of Chain/Network IDs

<https://medium.com/@piyopiyo/list-of-ethereums-major-network-and-chain-ids-2bc58e928508>

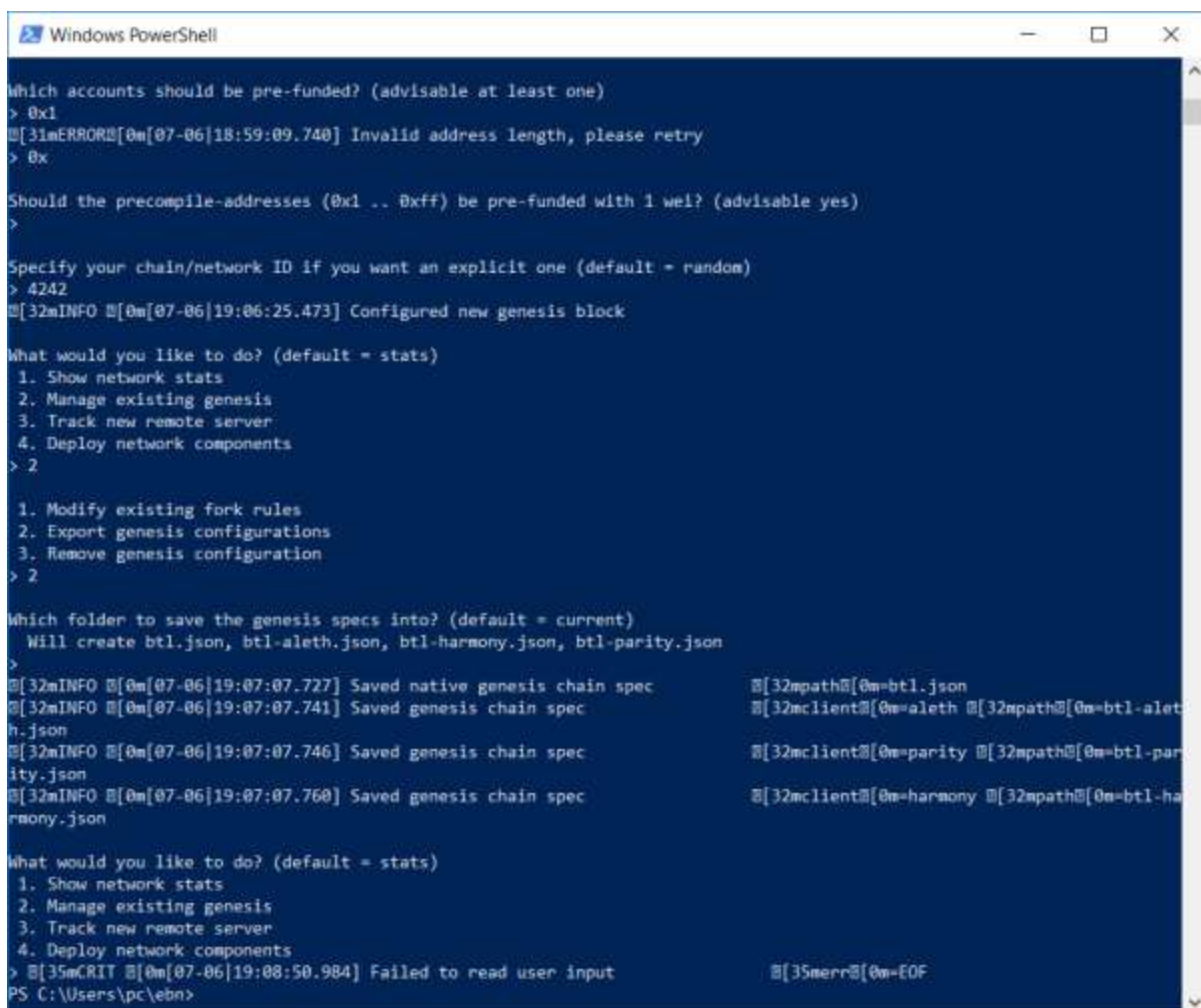
Select the Kovan Network for testing as 4242

Select 2: Manage Genesis

Select 2: Export Genesis Configuration

JSON files get exported

Press Ctrl+C to quit the puppeth tool



```
Windows PowerShell

Which accounts should be pre-funded? (advisable at least one)
> 0x1
[31mERROR[0m[07-06|18:59:09.740] Invalid address length, please retry
> 0x

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

Specify your chain/network ID if you want an explicit one (default = random)
> 4242
[32mINFO [0m[07-06|19:06:25.473] 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 fork rules
2. Export genesis configurations
3. Remove genesis configuration
> 2

Which folder to save the genesis specs into? (default = current)
Will create btl.json, btl-aleth.json, btl-harmony.json, btl-parity.json
>
[32mINFO [0m[07-06|19:07:07.727] Saved native genesis chain spec [32mpath[0m=btl.json
[32mINFO [0m[07-06|19:07:07.741] Saved genesis chain spec [32mclient[0m=aleth [32mpath[0m=btl-aleth.json
[32mINFO [0m[07-06|19:07:07.746] Saved genesis chain spec [32mclient[0m=parity [32mpath[0m=btl-parity.json
[32mINFO [0m[07-06|19:07:07.760] Saved genesis chain spec [32mclient[0m=harmony [32mpath[0m=btl-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
> [35mCRIT [0m[07-06|19:08:50.984] Failed to read user input [35merr[0m=EOF
PS C:\Users\pc\ebn>
```

Open the btl.json file in atom IDE to view the file

atom btl.json

Now issue the command to create a local node

geth --datadir . init btl.json

The keystore folder contains the list of accounts who can access the Blockchain

Lets create three accounts for

1. Miner
2. Buyer
3. Seller

geth --datadir . account new

Give some password to the account e.g. 123456

```
Windows PowerShell
PS C:\Users\pc\ebn> geth --datadir . account new
[INFO [07-06|19:28:49.090] Maximum peer count          ETH=25 LES=0 total=25
Your new account is locked with a password. Please give a password. Do not forget this password.
Passphrase:
Repeat passphrase:
Address: {24fa378f291307824c56d6dd4bc545f992e9fc31}
PS C:\Users\pc\ebn> geth --datadir . account new
[INFO [07-06|19:31:27.781] Maximum peer count          ETH=25 LES=0 total=25
Your new account is locked with a password. Please give a password. Do not forget this password.
Passphrase:
Repeat passphrase:
Address: {09427db1ba2782c468218e429d1fc3f546ac055f}
PS C:\Users\pc\ebn> geth --datadir . account new
[INFO [07-06|19:32:18.180] Maximum peer count          ETH=25 LES=0 total=25
Your new account is locked with a password. Please give a password. Do not forget this password.
Passphrase:
Repeat passphrase:
Address: {b6e4a1d07e98032b99be96a7b99e605b004c6630}
PS C:\Users\pc\ebn>
```

Now these accounts are available inside the keystore folder

```
Windows PowerShell
PS C:\Users\pc\ebn> cd .\keystore\
PS C:\Users\pc\ebn\keystore> dir

Directory: C:\Users\pc\ebn\keystore

Mode                LastWriteTime         Length Name
----                -
-a----             06-07-2019      19:29           491 UTC--2019-07-06T13-59-31.201662900Z--24fa378f291307824c56d6dd4bc545f992e9fc31
-a----             06-07-2019      19:31           491 UTC--2019-07-06T14-01-35.723040900Z--09427db1ba2782c468218e429d1fc3f546ac055f
-a----             06-07-2019      19:32           491 UTC--2019-07-06T14-02-23.540771400Z--b6e4a1d07e98032b99be96a7b99e605b004c6630

PS C:\Users\pc\ebn\keystore>
```


We can also see list of accounts from main folder

geth --datadir . account list

```
Windows PowerShell
PS C:\Users\pc\ebn> geth --datadir . account list
[INFO [07-06|19:37:26.737] Maximum peer count          ETH=25 LES=0 total=25
Account #0: {24fa378f291307824c56d6dd4bc545f992e9fc31} keystore://C:\Users\pc\ebn\keystore\UTC--2019-07-06T13-59-31.201662900Z--24fa378f291307824c56d6dd4bc545f992e9fc31
Account #1: {09427db1ba2782c468218e429d1fc3f546ac055f} keystore://C:\Users\pc\ebn\keystore\UTC--2019-07-06T14-01-35.723040900Z--09427db1ba2782c468218e429d1fc3f546ac055f
Account #2: {b6e4a1d07e98032b99be96a7b99e605b004c6630} keystore://C:\Users\pc\ebn\keystore\UTC--2019-07-06T14-02-23.540771400Z--b6e4a1d07e98032b99be96a7b99e605b004c6630
PS C:\Users\pc\ebn>
```

Starting the local node by creating startnode.cmd file


Connecting to local node



```
Windows PowerShell
PS C:\Users\pc> geth attach http://127.0.0.1:8545
Welcome to the Geth JavaScript console!

instance: Geth/v1.8.27-stable-4bcc0a37/windows-amd64/go1.11.5
coinbase: 0x24fa378f291307824c56d6dd4bc545f992e9fc31
at block: 181 (Sat, 06 Jul 2019 20:07:03 IST)
modules: eth:1.0 net:1.0 personal:1.0 rpc:1.0 web3:1.0

> eth.accounts
["0x24fa378f291307824c56d6dd4bc545f992e9fc31", "0xb9427d11a2772c66821ba29d11fc3f546a0c055", "0xb60a1007e980321b99ce9a2f99f6809e004c6630"]
> eth.coinbase
"0x24fa378f291307824c56d6dd4bc545f992e9fc31"
>
```



```
Windows PowerShell
PS C:\Users\pc> geth attach http://127.0.0.1:8545
Welcome to the Geth JavaScript console!

instance: Geth/v1.8.27-stable-4bcc0a37/windows-amd64/go1.11.5
coinbase: 0x24fa378f291307824c56d6dd4bc545f992e9fc31
at block: 243 (Sat, 06 Jul 2019 20:10:52 IST)
modules: eth:1.0 net:1.0 personal:1.0 rpc:1.0 web3:1.0

> eth.getBalance(eth.coinbase)
Error: Invalid argument: account index out of range

> eth.getBalance(eth.accounts[1])
Error: Invalid argument: account index out of range

>
```

View amount in ether

```
Windows PowerShell
PS C:\Users\pc> geth attach http://127.0.0.1:8545
Welcome to the Geth JavaScript console!

instance: Geth/v1.8.27-stable-4bcc0a37/windows-amd64/go1.11.5
coinbase: 0x24fa378f291307824c56d6dd4bc545f992e9fc31
at block: 261 (Sat, 06 Jul 2019 20:12:41 IST)
modules: eth:1.0 net:1.0 personal:1.0 rpc:1.0 web3:1.0

> web3.fromWei(eth.getBalance(eth.coinbase),"ether")
550
>
>
```

Unlocking accounts for some duration in seconds

```
Windows PowerShell
Welcome to the Geth JavaScript console!

instance: Geth/v1.8.27-stable-4bcc0a37/windows-amd64/go1.11.5
coinbase: 0x24fa378f291307824c56d6dd4bc545f992e9fc31
at block: 337 (Sat, 06 Jul 2019 20:18:27 IST)
modules: eth:1.0 net:1.0 personal:1.0 rpc:1.0 web3:1.0

> net.version
"4242"
> personal.unlockAccount(eth.accounts[1],"123456",300)
true
>
```

Transfer funds from one account to another account

```
Windows PowerShell
coinbase: 0x24fa378f291307824c56d6dd4bc545f992e9fc31
at block: 363 (Sat, 06 Jul 2019 20:20:29 IST)
modules: eth:1.0 net:1.0 personal:1.0 rpc:1.0 web3:1.0
> eth.sendTransaction({from:eth.coinbase,to:eth.accounts[1],value:w
eb3.toWei(10,"ether")})
"0x0ee4ff832cb7b69605c7f68da60f9bb2857397612617adf7c366d45d1273673d
"
> eth.sendTransaction({from:eth.coinbase,to:eth.accounts[2],value:w
eb3.toWei(10,"ether")})
"0x497b9d49480ef862245f161722e97886d4028b5d702bb45ab891735af4cb59bc
"
>
```