# Appendix D

## Multichain set up, CLI commands and Explorer install.

Bohemian 2-Node Demo:

**Set up Nodes (examples: not real)**

Node Bohemians:  ssh -i node-1-k.pem ubuntu@00.00.00.00 <private 00.00.00.00>

Node B\_Public:  ssh -i node-1-k.pem ubuntu@00.00.00.00 <private 00.00.00.00>

**Addresses (examples: not real)**

Node Bohemians: priv\_chain1 ur2UDuhuT1Kks8MfJno8Efxd1AwMxKF2GSiM73

Node Bohemians: pub\_chain2 1R3u9mJ5Z9Dkm6U9evbuxcZk8p4mMZU855hqkb

Node B\_Public: pub\_chain2 ny2hoDZsSCZnMgqsSVBa1anWZMGD7rqhgVB9R4

**Chains (examples: not real)**

**priv\_chain1: Bohemians<**172.00.00.00>

multichaind priv\_chain1@172.00.00.00:3333

rpcuser=multichainrpc

rpcpassword= QX3CTqSPeFURnCrcVtoS4opwj8DSVpKxJnYwc5uDQ

default-network-port = 7333    # Default TCP/IP port for peer-to-peer connection with other nodes.

default-rpc-port = 7334           # Default TCP/IP port for incoming JSON-RPC API requests.

**pub\_chain2: Bohemians<**172.00.00.00>

multichaind pub\_chain2@172.00.00.00:4444  <to connect to Bohemians node>

rpcuser=multichainrpc

rpcpassword=qYEfR6s2XsuwKwP77fr1pFTmqMx8LNhQuLvogS7yh

default-network-port = 4333             # Default TCP/IP port for peer-to-peer connection with other nodes.

default-rpc-port = 4334           # Default TCP/IP port for incoming JSON-RPC API requests.

**pub\_chain2: B\_Public<**172.00.00.00>

multichaind pub\_chain2@172.00.00.00:4444  <to connect to B\_Public node>

rpcuser=multichainrpc

rpcpassword=ohUiDeLk4NhCnfPQwnTnwq8AWsMRJPZNWR5jiej5X

default-network-port = 4333             # Default TCP/IP port for peer-to-peer connection with other nodes.

default-rpc-port = 4334  # Default TCP/IP port for incoming JSON-RPC API requests.

**Create assets:**

issue <address> <asset> 100 1

listassets

**Create streams:**

**Node0:**

create stream stream1 false #False means stream can only be written to by those with explicit

permission, to check: < list permissions stream1.\*>

publish stream1 key1 73747265616d2064617461 #key : value pair, to check: <liststreams>

subscribe stream1

liststreams

listpermissions stream1.\*

liststreamitems stream1

grant <address> receive,send #general send/receive perm for bc

grant <address> stream1.write #perm to write to specific stream

**Node-n:**

subscribe stream1

liststreamitems stream1

publish stream1 key1 736f6d65206f746865722064617461

publish stream1 key2 53747265616d732052756c6521

**Query commands:**     #check API documentation for more

multichain-cli chain1  #access interactive mode on server

getblockchainparams

liststreamkeys stream1

liststreamkeyitems stream1 key1

liststreampublishers stream1 1VybW5DuvHhDtgjVabqxjFbtgrdJYkHjqbZTfu

liststreampublisheritems stream1

listassets <asset1>

getaddressbalances <1VybW5DuvHhDtgjVabqxjFbtgrdJYkHjqbZTfu>

gettotalbalances

getmultibalances

listwallettransactions

send <address> <asset name> <quantity>

or for multiples c/w data in hexadecimal format:

sendwithdata 1Ns4PgxxUAjdYBNfdQ9jw2ewcKnoB9ZgoZ2wED '{"kids\_floodlight\_7-8":1, "kids\_floodlight\_5-6":1}' 54686573652061726520666f72206d792074776f206b69647320666f72206368726973746d61732e

useful…. (<https://codebeautify.org/hex-string-converter>)

getwallettransaction <txid of previous tx>

getwallettransaction 98e11f1b9e2fd41dd6a7e5dfa0ccf80c1a05482b233f22d4911e64d575e2fed8

**Round Robin Mining:**

**Node1:**

grant 1VybW5DuvHhDtgjVabqxjFbtgrdJYkHjqbZTfu mine #permission to mine <listpermissions mine>

**Node2:**

listpermissions mine

**Multichain-explorer setup (examples: not real)**

>>browser: 52.00.00.00:2222 #Node1 ip + port no.

exit interactive mode on Node1

Install dependencies for multichain-explorer (list on Github.com/multichain/multichainexplorer)

sudo apt-get install git

sudo git clone https:// <copy from github drop down>

ll  #to list and check file is there

cd multichain-explorer

python setup.py install —user  #recommended

————

cd ~/.multichain/chain1/

cat multichain.conf

grep rpc params.dat #copy rpcport=

echo “rpcport=4246” >> multichain.conf #use nano to edit mistakes!

cd  #home

cd multichain-explorer

ll

cp chain1.example.conf chain1.conf #rename

sudo nano chain1.conf  #to edit - using defaults here

python -m Mce.abe --config chain1.conf --commit-bytes 10000 --no-serve #start

python -m Mce.abe --config chain1.conf  #launches thread to listen on port <2750>, for tx every 60.0 secs

Ctrl + c in terminal window aborts thread.

Browser points to: 52.00.00.00:2750 #Node1 ip + port no.  #config server Security group for port no.

**Configure web demo:**

sudo service apache2 status

ubuntu@….: ~/www/multichain-web-demo$ cat ~/.multichain/chain1/multichain.conf

rpcuser=multichainrpc

rpcpassword=BYWVXHq5jxVPtAhQ3k1oD JCZvo9xRKXzimBDAYhEiQB6

rpcport=4222

sudo cp config-example.txt config.txt

sudo nano config.txt

**Note**

[nohup multichaind <name> &]  #to run in the background even if ssh terminates

[Node 1:  ssh -i node-1-k.pem ubuntu@52.00.00.00

Daemon connect:    multichaind chain1@172.00.00.00:4444

default-network-port = 4777          # Default TCP/IP port for peer-to-peer connection with other nodes.

default-rpc-port = 4778               # Default TCP/IP port for incoming JSON-RPC API requests.

Address Node1:  sxpmNbqphp7W12LaiEfhKwhGzq7Csr2tMTU

Node 2:  ssh -i node-1-k.pem ubuntu@34.00.00.00

Address Node2:  btgrdJYkHjqbZTfu1VybW5DuvHhDtgjVab   ]