

Installing Orion on Besu for private transactions

Remember

To enable privacy functionality in production systems, Orion must be highly available and run in a separate instance to Hyperledger Besu.

Installing Orion

- Clone the Orion repository

```
cd /home/blockchain
git clone https://github.com/PegaSysEng/orion.git
```

- Build Orion with the Gradle wrapper gradlew, omitting tests as follows:

```
cd orion
./gradlew build -x test
```

- Go to the distribution directory:

```
cd build/distributions/
tar -xzf orion-1.5.1-SNAPSHOT.tar.gz
```

- test successful installation

```
cd orion-<version>/
bin/orion --help
```

Orion is now installed in /home/blockchain/orion/build/distributions/orion-1.5.1-SNAPSHOT/orion/bin

Configuring Besu with Orion

- Create Orion Directories in each node folder

Clique-Network/

```
|— Node-1
|  |— data
|  |— Orion
|— Node-2
|  |— data
|  |— Orion
```

```
|— Node-3
|   |— data
|   |— Orion
```

- Create Password Files

In each Orion directory, create a file called passwordFile containing a password to encrypt each Orion key pair.

```
echo pwdorion1 > passwordFile
```

- Generate Orion Keys

In each Orion directory, generate a public/private keypair for the Orion node:

```
/home/blockchain/orion/build/distributions/orion-1.5.1-SNAPSHOT/bin/orion -g  
nodekey
```

- Create Orion Configuration Files

In the Node-1/Orion directory, create a file called orion.conf and add the following properties:

Node-1

```
nodeurl = "http://127.0.0.1:8081/"  
nodeport = 8081  
clienturl = "http://127.0.0.1:8888/"  
clientport = 8888  
publickeys = ["nodeKey.pub"]  
privatekeys = ["nodeKey.key"]  
passwords = "passwordFile"  
tls = "off"
```

Node-2

```
nodeurl = "http://127.0.0.1:8082/"  
nodeport = 8082  
clienturl = "http://127.0.0.1:8889/"  
clientport = 8889  
publickeys = ["nodeKey.pub"]  
privatekeys = ["nodeKey.key"]  
passwords = "passwordFile"  
othernodes = ["http://127.0.0.1:8081/"]  
tls = "off"
```

Node-3

```
nodeurl = "http://127.0.0.1:8083/"
nodeport = 8083
clienturl = "http://127.0.0.1:8890/"
clientport = 8890
publickeys = ["nodekey.pub"]
privatekeys = ["nodekey.key"]
passwords = "passwordFile"
othernodes = ["http://127.0.0.1:8081/"]
tls = "off"
```

Start Orion Nodes

In each Orion directory, start Orion specifying the configuration file created in the previous step:

```
/home/blockchain/orion/build/distributions/orion-1.5.1-SNAPSHOT/bin/orion
orion.conf
```

otherwise you can create an autostart file `orion_start_nodes.sh`

```
# start node-1
cd /home/blockchain/besu/besu-1.3.7/Clique-Network/Node-1/Orion
tmux new-session -d -s orion1 "/home/blockchain/orion/build/distributions/orion-
1.5.1-SNAPSHOT/bin/orion orion.conf"

# start node-2
cd /home/blockchain/besu/besu-1.3.7/Clique-Network/Node-2/Orion
tmux new-session -d -s orion2 "/home/blockchain/orion/build/distributions/orion-
1.5.1-SNAPSHOT/bin/orion orion.conf"

#start node-3
cd /home/blockchain/besu/besu-1.3.7/Clique-Network/Node-3/Orion
tmux new-session -d -s orion3 "/home/blockchain/orion/build/distributions/orion-
1.5.1-SNAPSHOT/bin/orion orion.conf"
```

then check Orion with:

```
tmux a -t orion1
```

Start Besu

Now you can start Besu with new configuration

I create a file with these commands:

Node-1

```
tmux new-session -d -s node1 "/home/blockchain/besu/besu-1.3.7/bin/besu --data-  
path=Node-1/data --genesis-file=cliqueGenesis.json --network-id 1981 --rpc-  
http-enabled --rpc-http-api=ETH,NET,CLIQUE,EEA,PRIV --host-whitelist='*' --rpc-  
http-cors-origins='all' --rpc-http-host=0.0.0.0 --privacy-enabled --privacy-  
url=http://127.0.0.1:8888 --privacy-public-key-file=Node-1/Orion/nodeKey.pub --  
min-gas-price=0"
```

Node-2

```
tmux new-session -d -s node2 "/home/blockchain/besu/besu-1.3.7/bin/besu --data-  
path=Node-2/data --genesis-file=cliqueGenesis.json --bootnodes  
enode://244e17466e2dbcfc5f6242bb22ebd7387d463386c80ab1656392b4b3a2e55b49bab503bc  
e1f3357880beb92e3efe5b944eb7eede7b15a7e1007330e6f1d9bde6@127.0.0.1:30303 --  
network-id 1981 --p2p-port=30304 --rpc-http-enabled --rpc-http-  
api=ETH,NET,CLIQUE,EEA,PRIV --host-whitelist='*' --rpc-http-cors-origins='all' -  
-rpc-http-port=8546 --privacy-enabled --privacy-url=http://127.0.0.1:8889 --  
privacy-public-key-file=Node-2/Orion/nodeKey.pub --min-gas-price=0"
```

Node-3

```
tmux new-session -d -s node3 "/home/blockchain/besu/besu-1.3.7/bin/besu --data-  
path=Node-3/data --genesis-file=cliqueGenesis.json --bootnodes  
enode://244e17466e2dbcfc5f6242bb22ebd7387d463386c80ab1656392b4b3a2e55b49bab503bc  
e1f3357880beb92e3efe5b944eb7eede7b15a7e1007330e6f1d9bde6@127.0.0.1:30303 --  
network-id 1981 --p2p-port=30305 --rpc-http-enabled --rpc-http-  
api=ETH,NET,CLIQUE,EEA,PRIV --host-whitelist='*' --rpc-http-cors-origins='all' -  
-rpc-http-port=8547 --privacy-enabled --privacy-url=http://127.0.0.1:8890 --  
privacy-public-key-file=Node-3/Orion/nodeKey.pub --min-gas-price=0"
```