AWS Architecture for Private Blockchain network

Graphical user interface, application

Description automatically generated

# Configure AWS Resources

1. Create a VPC with a public and private subnet.
2. Create another private subnet in the same VPC and in different AZ than the previous subnet.
3. Graphical user interface

   Description automatically generatedCreate a Security Group to associate with the EC2 instances.
4. Launch 3 EC2 instances – 1 in each subnet.

# Install and configure Hyperledger Besu

1. SSH into the public EC2 instance and use this as bastion host to SSH into other EC2 instances.
2. Run the following commands on each instance to install Hyperledger Besu

*sudo apt update*

*sudo apt-get install openjdk-11-jdk*

*sudo wget* [*https://hyperledger.jfrog.io/artifactory/besu-binaries/besu/21.10.5/besu-21.10.5.tar.gz*](https://hyperledger.jfrog.io/artifactory/besu-binaries/besu/21.10.5/besu-21.10.5.tar.gz)

*sudo mkdir -p /opt/besu/*

*sudo chown -R ubuntu:ubuntu /opt/besu/*

*tar -C /opt/besu/ -xvf besu-21.10.5.tar.gz*

Run Besu Nodes on EC2

1. On EC2-3 create directory **bootnode🡪data**
2. Generate address of signer account by running the below command

*sudo besu --data-path=bootnode/data public-key export-address --to=bootnode/data/bootnodeAddress*

1. On EC2-2 create directory **Node3🡪data**
2. Generate address of signer account by running the below command

*sudo besu --data-path=Node3/data public-key export-address --to=bootnode/data/Node3Address*

1. Text, application

   Description automatically generatedCreate the genesis file cliqueGenesis.json with predefined signer accounts and 3 prefunded accounts (genesis file is added separately)
2. Upload the genesis file to all EC2 instances.
3. Start the bootnode using the below command

*sudo besu --data-path=bootnode/data --genesis-file=cliqueGenesis.json --network-id 12234567 --rpc-http-enabled --rpc-http-api=ETH,NET,CLIQUE --host-allowlist="\*" --rpc-http-cors-origins="all" --miner-enabled --miner-coinbase=<bootnodeaddress> --p2p-host=<EC2privateIP> &*

1. Copy the enode URL from the output displayed on starting bootnode and replace the blue text in the below commands.
2. Create similar directory structure in other EC2 instances **Node(n)🡪data** and start all the nodes using the below commands

*sudo besu --data-path=Node1/data --genesis-file=cliqueGenesis.json --bootnodes= enode://84dfe3ede2415ac9e785bf3f04f6ce2467656be680b53a0e105d32ce3e0388b25875242d52469d722b30fb1b4d2feae509fa722bf031255b6cea0894cb5c46e6@10.0.1.18:30303 --network-id 12234567 --p2p-port=30303 --rpc-http-enabled --rpc-http-api=ETH,NET,CLIQUE --rpc-http-host=<EC2privateIP> --host-allowlist="\*" --rpc-http-cors-origins="all" --rpc-http-port=8546 --p2p-host=<EC2privateIP> &*

*sudo besu --data-path=Node2/data --genesis-file=cliqueGenesis.json --bootnodes= enode://84dfe3ede2415ac9e785bf3f04f6ce2467656be680b53a0e105d32ce3e0388b25875242d52469d722b30fb1b4d2feae509fa722bf031255b6cea0894cb5c46e6@10.0.1.18:30303 --network-id 12234567 --p2p-port=30303 --rpc-http-enabled --rpc-http-api=ETH,NET,CLIQUE --rpc-http-host=<EC2privateIP> --host-allowlist="\*" --rpc-http-cors-origins="all" --rpc-http-port=8546 --p2p-host=<EC2privateIP> &*

*sudo besu --data-path=Node3/data --genesis-file=cliqueGenesis.json --bootnodes= enode://84dfe3ede2415ac9e785bf3f04f6ce2467656be680b53a0e105d32ce3e0388b25875242d52469d722b30fb1b4d2feae509fa722bf031255b6cea0894cb5c46e6@10.0.1.18:30303 --network-id 12234567 --p2p-port=30304 --rpc-http-enabled --rpc-http-api=ETH,NET,CLIQUE --rpc-http-host=<EC2privateIP> --host-allowlist="\*" --rpc-http-cors-origins="all" --rpc-http-port=8547 --miner-enabled --miner-coinbase=<Node3Address> --p2p-host=<EC2privateIP> &*

*sudo besu --data-path=Node4/data --genesis-file=cliqueGenesis.json --bootnodes= enode://84dfe3ede2415ac9e785bf3f04f6ce2467656be680b53a0e105d32ce3e0388b25875242d52469d722b30fb1b4d2feae509fa722bf031255b6cea0894cb5c46e6@10.0.1.18:30303 --network-id 12234567 --p2p-port=30304 --rpc-http-enabled --rpc-http-api=ETH,NET,CLIQUE --rpc-http-host=<EC2privateIP> --host-allowlist="\*" --rpc-http-cors-origins="all" --rpc-http-port=8546 --p2p-host=<EC2privateIP> &*

1. The private blockchain network is now running with 5 nodes out of which 2 are miner nodes.
2. We can connect metamask to this network using the url : http://<Public IP of Node1>:8546 and chain id - *12234567*