



以太坊聯盟鏈部署實作

Ken @ITRI

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Ken Lin

經歷:

SOLA	DevOps / Blockchain Engineer
InfiniteChain	DevOps / Blockchain Engineer
Melten	Senior Software Engineer
Akubic	Backend Team Lead
R3DSTAR	Software Engineer / Project Lead

社群組織:

Taipei Ethereum Meetup Co-organizer

專長:

Blockchain
雲端機器管理
DevOps導入



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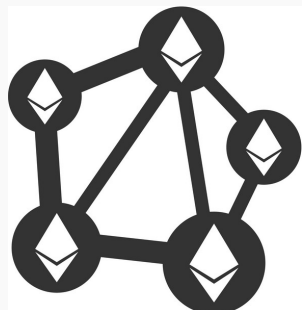
啟動聯盟鏈

01

公有鏈與聯盟鏈

公有鏈與聯盟鏈

Public Blockchain and Consortium Blockchain



公有鏈(Public Blockchain)

- * 無許可式存取
- * 目標使用者為任何人士/組織



聯盟鏈(Consortium Blockchain)

- * 許可式存取
- * 目標使用者為特定人士/組織

前置作業

preparation



course material

https://drive.google.com/file/d/17v5feDYixmlhKkoHAXuCoB_utEJm5MSg/view?usp=sharing



geth(1.9.0)

<https://geth.ethereum.org/downloads/>



workspace

1. [Windows] powershell or cmd
[Mac OS] other → terminal
2. [Windows & Mac OS] copy dir "practice" to your desktop & cd
3. [Windows] install geth-windows.exe

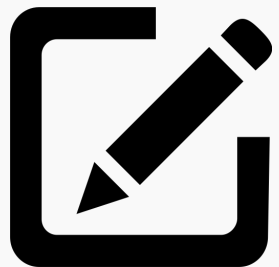
The background features a complex network of thin, light gray lines connecting various sized dots, some of which are solid black and others are light gray. These network structures are concentrated on the left and right sides of the image, framing the central text.

02

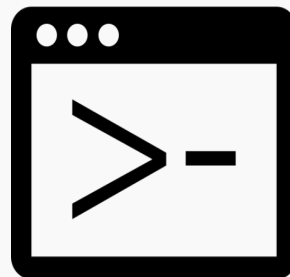
準備聯盟鏈

準備自己的創世區塊

Prepare genesis



自行編寫創世區塊



使用puppeth製作

編寫創世區塊

Compose genesis

```
{  
  "config": {  
    "chainId": 999999,  
    "homesteadBlock": 1,  
    "eip150Block": 2,  
    "eip150Hash": "0x0000000000000000000000000000000000000000000000000000000000000000",  
    "eip155Block": 3,  
    "eip158Block": 3,  
    "byzantiumBlock": 4,  
    "clique": {  
      "period": 3,  
      "epoch": 30000  
    }  
  },  
}
```

```
[MacBook-Pro-2:practice kenlin$ ./geth --datadir gethdata init poa.json
INFO [07-17|02:11:42.537] Bumping default cache on mainnet
provided=1024 updated=4096
INFO [07-17|02:11:42.541] Maximum peer count
ETH=50 LES=0 total=50
INFO [07-17|02:11:42.563] Allocated cache and file handles
database=/Users/kenlin/Desktop/20190717_ITRI聯盟鏈/Consortium_Blockchain/practice/gethdata/geth/chaindata
cache=16.00MiB handles=16
INFO [07-17|02:11:42.584] Writing custom genesis block
INFO [07-17|02:11:42.594] Persisted trie from memory database
nodes=355 size=50.69KiB time=1.239084ms gcnodes=0
gcsizes=0.00B gctime=0s livenodes=1 livesize=0.00B
INFO [07-17|02:11:42.595] Successfully wrote genesis state
database=chaindata hash=5c956a...fb2adf
INFO [07-17|02:11:42.595] Allocated cache and file handles
database=/Users/kenlin/Desktop/20190717_ITRI聯盟鏈/Consortium_Blockchain/practice/gethdata/geth/lightchaindata
cache=16.00MiB handles=16
INFO [07-17|02:11:42.617] Writing custom genesis block
INFO [07-17|02:11:42.626] Persisted trie from memory database
nodes=355 size=50.69KiB time=1.125376ms gcnodes=0
gcsizes=0.00B gctime=0s livenodes=1 livesize=0.00B
INFO [07-17|02:11:42.627] Successfully wrote genesis state
database=lightchaindata hash=5c956a...fb2adf
MacBook-Pro-2:practice kenlin$
```

初始化

Initialize

geth相關指令

```
geth --datadir gethdata init poa.json
```

指令參考

```
1_init_geth.txt
```

The background features a complex network of thin grey lines connecting various sized grey dots, creating a web-like structure that frames the central text.

n3

啟動聯盟鏈

```
[MacBook-Pro-2:practice kenlin$ ./geth --networkid 999999 -
-rpc --rpccorsdomain "*" --rpcaddr 0.0.0.0 --rpcapi "db,et
h,net,web3,personal" --port 30303 --rpcport 8545 --datadir
gethdata --allow-insecure-unlock --unlock 0x4dcc2b0Ec9237
da36760EBE938BBD1deEb313525 --etherbase 0x4dcc2b0Ec9237da3
6760EBE938BBD1deEb313525 --password poa_signer.pwd --mine
INFO [07-17|02:12:48.740] Maximum peer count
        ETH=50 LES=0 total=50
INFO [07-17|02:12:48.762] Starting peer-to-peer node
        instance=Geth/v1.9.0-stable-52f24617/darwin-amd64
/go1.12.7
INFO [07-17|02:12:48.762] Allocated trie memory caches
        clean=256.00MiB dirty=256.00MiB
INFO [07-17|02:12:48.763] Allocated cache and file handles
        database=/Users/kenlin/Desktop/20190717_ITRI聯盟
鏈/Consortium_Blockchain/practice/gethdata/geth/chaindata
cache=512.00MiB handles=5120
INFO [07-17|02:12:48.836] Opened ancient database
        database=/Users/kenlin/Desktop/20190717_ITRI聯盟
鏈/Consortium_Blockchain/practice/gethdata/geth/chaindata/
ancient
INFO [07-17|02:12:48.837] Initialised chain configuration
        config="{ChainID: 999999 Homestead: 1 DAO: <nil>
DAOSupport: false EIP150: 2 EIP155: 3 EIP158: 3 Byzantium:
4 Constantinople: <nil> Petersburg: <nil> Engine: clique
}"
INFO [07-17|02:12:48.837] Initialising Ethereum protocol
        versions=[63] network=999999 dbversion=<nil>
WARN [07-17|02:12:48.837] Upgrade blockchain database vers
ion        from=<nil> to=7
INFO [07-17|02:12:48.887] Loaded most recent local header
        number=0 hash=5c956a...fb2adf td=1 age=1y5mo2w
INFO [07-17|02:12:48.887] Loaded most recent local full bl
ock        number=0 hash=5c956a...fb2adf td=1 age=1y5mo2w
INFO [07-17|02:12:48.887] Loaded most recent local fast bl
ock        number=0 hash=5c956a...fb2adf td=1 age=1y5mo2w
INFO [07-17|02:12:48.888] Regenerated local transaction jo
urnal        transactions=0 accounts=0
INFO [07-17|02:12:48.897] Allocated fast sync bloom
        size=512.00MiB
```

啟動geth

Start geth

geth相關指令

```
geth \
--networkid 999999 --rpc --rpccorsdomain "*" --rpcaddr 0.0.0.0 \
--rpcapi "db,eth,net,web3,personal" --port 30303 --rpcport 8545 \
--datadir gethdata --allow-insecure-unlock \
--unlock 0x4dcc2b0Ec9237da36760EBE938BBD1deEb313525 \
--etherbase 0x4dcc2b0Ec9237da36760EBE938BBD1deEb313525 \
--password poa_signer.pwd \
--mine
```

指令參考

2_start_geth.txt

使用geth控制台與節點互動

Interact with node by attach command

[Mac OS] 進入geth控制台

```
geth attach /gethdata/geth.ipc
```

[Windows] 進入geth控制台

```
geth attach ipc:\\.\\pipe\\geth.ipc
```

```
ubuntu@ip-172-30-0-61:~/ethereum_basic_course/node_management/with_docker$ docker exec -it geth-full sh
/ #
/ #
/ # geth attach /gethdata/geth.ipc
Welcome to the Geth JavaScript console!

instance: Geth/v1.8.27-stable-4bcc0a37/linux-amd64/go1.11.9
modules: admin:1.0 debug:1.0 eth:1.0 ethash:1.0 miner:1.0
net:1.0 personal:1.0 rpc:1.0 txpool:1.0 web3:1.0

> █
```

```
> admin.nodeInfo
{
  enode: "enode://4d6cbdb2510dd7877b9805efc9fbe2ec90806291be1694b097f9ac78b1d06ca1d7e642568cb22f0da0fa1efaf2f4594df57111bce27f3b52c54d61547ba013da@13.229.86.173:30303",
  enr: "0xf89cb840b710186eb363dc394c5c0f7f7817095f78b63d3a44ed4600e7a3d7284911a1a17c9f0dc19cc6a12c31a304b3cfc866ec21be3c081aae76a539a33f7c3be84ab20483636170ccc5836574683ec5836574683f826964827634826970840de556ad89736563703235366b31a1024d6cbdb2510dd7877b9805efc9fbe2ec90806291be1694b097f9ac78b1d06ca18374637082765f8375647082765f",
  id: "1430251ef869041452b8a1e3d4fb6705b64fdb96c996d492dab77597ff93e015",
  ip: "13.229.86.173",
  listenAddr: "[::]:30303",
  name: "Geth/v1.8.27-stable-4bcc0a37/linux-amd64/go1.11.9",
  ports: {
    discovery: 30303,
    listener: 30303
  },
  protocols: {
    eth: {
      config: {
        byzantiumBlock: 1700000,
        chainId: 3,
        constantinopleBlock: 4230000,
        daoForkSupport: true,
        eip150Block: 0,
        eip150Hash: "0x41941023680923e0fe4d74a34bdac8141f2540e3ae90623718e47d66d1ca4a2d",
        eip155Block: 10,
        eip158Block: 10,
        ethash: {},
        homesteadBlock: 0,
        petersburgBlock: 4939394
      },
      difficulty: 9938013227269080,
      genesis: "0x41941023680923e0fe4d74a34bdac8141f2540e3ae90623718e47d66d1ca4a2d",
      head: "0x53506328daa9a757066020e029f5ded112e7b4a31208a3a5870934f79b51f072",
      network: 3
    }
  }
}
```

獲取節點資訊

Get node information

於geth console執行指令

```
admin.nodeInfo
```

```
[> admin.peers
[{"
  caps: ["eth/63", "les/2", "les/3"],
  enode: "enode://7c19a77a273cb3e9a69c874ddd168f90ce5
56bc1316d259da12c5ac90462113ce476de65852c8b9f94564b4016
d7736e59a858dc120b361a0f46c9a69cf2b3ca@83.54.60.87:3036
9",
  id: "7c7722b6fc35a14a6b32361d6af933e95fbee81faf6109
6cfecd677ab3ca7aeb",
  name: "Geth/ColmenaSvQ/v1.9.0-stable-52f24617/linux
-amd64/go1.11.5",
  network: {
    inbound: false,
    localAddress: "192.168.31.100:52203",
    remoteAddress: "83.54.60.87:30369",
    static: false,
    trusted: false
  },
  protocols: {
    eth: "handshake"
  }
}]
[> admin.peers
[{"
  caps: ["eth/63"],
  enode: "enode://22ecc82e91739dbd153a0444c79b208ba37
f58412cf0b219315e7da292428d8891438708ac7e428c06a85e914f
cab478444953648975bb5c0465dba1785bfc63@46.101.3.50:3030
3",
  id: "7c69088052ab77a6b05b7c77984bebbe3420f47ea16f3f
aeca7a11a22cf72708",
  name: "Geth/v1.9.0-stable-52f24617/linux-amd64/go1.
11.5",
  network: {
    inbound: false,
    localAddress: "192.168.31.100:52206",
    remoteAddress: "46.101.3.50:30303",
    static: false,
    trusted: false
```

目前連線節點

Node connected currently


於geth console執行指令

```
admin.peers
```

Trying connect to specific node

於geth console執行指令

[illegible]



谢谢

THANK YOU