以太坊聯盟鏈部署實作

Ken @ITRI

2019年7月17日

Ken Lin

經歷:

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

社群組織:

Taipei Ethereum Meetup   Co-organizer
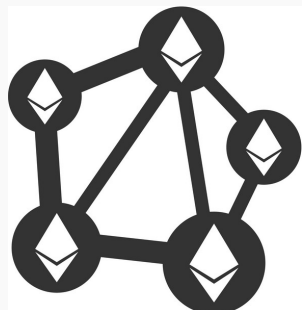
專長:

Blockchain
雲端機器管理
DevOps導入

CONTENT

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://reurl.cc/N7ojk

⚙ **geth(1.9.0)**

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

⚙ **workspace**

1. [Windows] powershell or cmder

   [Mac OS] other → terminal

2. [Windows & Mac OS] copy dir "practice" to your desktop & cd

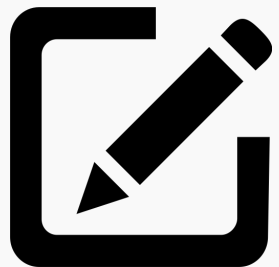3. [Windows] install geth-windows.exe
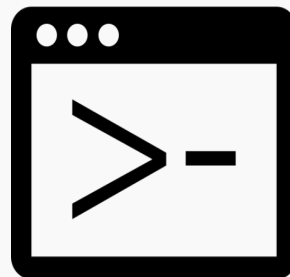
02

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

```json
{
  "config": {
    "chainId": 999999,
    "homesteadBlock": 1,
    "eip150Block": 2,
    "eip150Hash": "0x0000000000
    "eip155Block": 3,
    "eip158Block": 3,
    "byzantiumBlock": 4,
    "clique": {
      "period": 3,
      "epoch": 30000
    }
  },
```

```
[MacBook-Pro-2:practice kenlin$ ./geth --datadir gethdata i]
nit 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 datab
ase        nodes=355 size=50.69KiB time=1.239084ms gcnodes=0
 gcsize=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/lightchain
data 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 datab
ase        nodes=355 size=50.69KiB time=1.125376ms gcnodes=0
 gcsize=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

03

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
```

```
> admin.nodeInfo
{
  enode: "enode://4d6cbdb2510dd7877b9805efc9fbe2ec90806291be1694b097
f9ac78b1d06ca1d7e642568cb22f0da0fa1efaf2f4594df57111bce27f3b52c54d61
547ba013da@13.229.86.173:30303",
  enr: "0xf89cb840b710186eb363dc394c5c0f7f7817095f78b63d3a44ed4600e7
a3d7284911a1a17c9f0dc19cc6a12c31a304b3cfc866ec21be3c081aae76a539a33f
7c3be84ab20483636170ccc5836574683ec5836574683f826964827634826970840d
e556ad8973656370323536b31a1024d6cbdb2510dd7877b9805efc9fbe2ec908062
91be1694b097f9ac78b1d06ca18374637082765f8375647082765f",
  id: "1430251ef869041452b8a1e3d4fb6705b64fdb96c996d492dab77597ff93e
015",
  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: "0x41941023680923e0fe4d74a34bdac8141f2540e3ae906
23718e47d66d1ca4a2d",
        eip155Block: 10,
        eip158Block: 10,
        ethash: {},
        homesteadBlock: 0,
        petersburgBlock: 4939394
      },
      difficulty: 9938013227269080,
      genesis: "0x41941023680923e0fe4d74a34bdac8141f2540e3ae90623718
e47d66d1ca4a2d",
      head: "0x53506328daa9a757066020e029f5ded112e7b4a31208a3a587093
4f79b51f072",
      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
cab47844953648975bb5c0465dba1785bfc63@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

嘗試連線特定節點
Trying connect to specific node

於geth console執行指令

```
admin.addPeer("enode://…")
```

谢谢

THANK YOU