

## 准备工作

ubuntu16.04安装erlang环境

```
sudo apt-get install erlang
```

下载epoch release包，并解压

## 生成 beneficiary(挖矿受益者)账户

解压后重命名文件夹为node，在node子文件夹bin中有一个名为epoch的shell脚本执行命令。不过，在生成账户之前需要安装密钥支持库的相关依赖

```
sudo apt-get install build-essential
```

```
wget https://download.libsodium.org/libsodium/releases/libsodium-1.0.16.tar.gz  
tar -xf libsodium-1.0.16.tar.gz && cd libsodium-1.0.16  
./configure && make && sudo make install && sudo ldconfig
```

以上的依赖完成后，可以利用node的子目录bin/epoch生成账户

```
./bin/epoch keys_gen PASSWORD
```

后面的PASSWORD是你自己定义的密钥，此密钥目的是给生成的公钥私钥对的私钥进行对称加密，每次使用账户的时候需要你用你输入的密钥进行对私钥解密。

```
yeqinfu@ubuntu:~/node$ ./bin/epoch keys_gen 990  
Generated keypair with encoded pubkey: ak$2mp7J6Jqcjb2mATVZpDpY9HqzkXaCxjfyd9o1ruX4qjc5zbhNN  
yeqinfu@ubuntu:~/node$ aa
```

生成后会在当前目录下生成新的文件夹generated\_keys里面包含新生成的文件夹公钥私钥

## 配置 beneficiary 账户

在node文件夹下创建一个epoch.yaml文件写入以下配置信息，并且更改配置账户字段为刚才生成的账户公钥

```

---
sync:
  port: 3115
  external_port: 3015

keys:
  dir: keys
  password: "secret"

http:
  external:
    port: 3013
  internal:
    port: 3113

websocket:
  internal:
    port: 3114
  channel:
    port: 3014

mining:
  beneficiary: "beneficiary_pubkey_to_be_replaced"
  autostart: true

chain:
  persist: true
  db_path: ./my_db

```

利用epoch脚本检查配置是否有效

```
./bin/epoch check_config epoch.yaml
```

```

* python3-q-text-as-data
Try: sudo apt install <selected package>
yeqinfu@ubuntu:~/node$ ./bin/epoch check_config epoch.yaml
OK
yeqinfu@ubuntu:~/node$

```

启动epoch

```

yeqinfu@ubuntu:~/node$ ./bin/epoch start
WARNING: ulimit -n is 1024; 24576 is the recommended minimum.
You are recommended to ensure the node is stopped and raise the maximum number of open files (try 'ulimit -n 24576') before starting the node.
yeqinfu@ubuntu:~/node$

```

会提示需要修改最大文件打开数量根据提示修改即可

ubuntu18.04 可能无法修改此项，16版本则可以。可能是硬件设备在不同版本受限不同。

我同样是虚拟机，18不行16则可以

执行

```
ulimit -n 50000
```

再次启动

```
./bin/epoch start
```

## 查看挖矿日志

启动后，node目录下会生成log/\*的若干文件，可以尝试搜索相关关键字来查看是否挖到新的块

```
grep "mined" log/epoch_mining.log
```

```
2018-09-12 17:26:38.851 [info] <0.1229.0>@aec_conductor:start_mining:645 Starting mining
yeqinfu@ubuntu:~/node$ grep "mined" log/epoch_mining.log
2018-09-12 03:36:38.452 [info] <0.1229.0>@aec_conductor:handle_mined_block:821 Block mined: Height = 4368; Hash = 70af817aac26122fa3f7222979f91ce9b3a1eca07a8d4d6356dc95ecc45f3e7f
2018-09-12 13:56:15.214 [info] <0.1229.0>@aec_conductor:handle_mined_block:821 Block mined: Height = 4572; Hash = dcbe8bbf7ead859e6dccc3e5569b319988ee42704e4faf0fe30e7b54a4de6d27d
yeqinfu@ubuntu:~/node$ ./bin/epoch
Usage: epoch {start|start_boot <file>|foreground|stop|restart|reboot|pid|ping|console|console_clean|console_boot <file>|attach|remote_console|upgrade|downgrade|install|uninstall|vers
```

当结果有值时，代表已经挖到新的块了

## 可能出现的错误

检查log/epoch\_mining.log有类似出现这些内容

```
Failed to mine block, runtime error; retrying with different nonce (was 13078180597498667023).
Error: {execution_failed,{signal,sigabrt,true}}
```

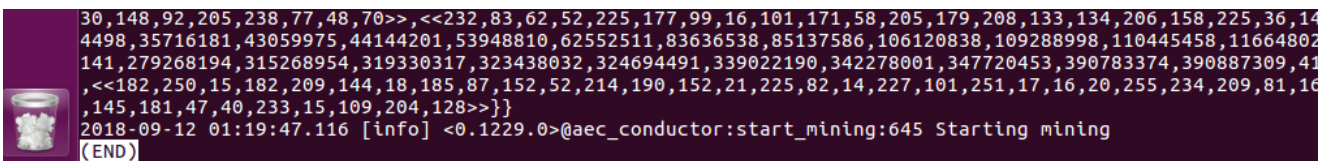
更改配置文件epoch.yaml

```
mining:
  autostart: true
```

改为

```
mining:
  autostart: true
cuckoo:
  miner:
    executable: lean30
    extra_args: ""
    node_bits: 30
```

然后执行 `bin/epoch stop; bin/epoch start;` 重启



```
30,148,92,205,238,77,48,70>>, <<232,83,62,52,225,177,99,16,101,171,58,205,179,208,133,134,206,158,225,36,14
4498,35716181,43059975,44144201,53948810,62552511,83636538,85137586,106120838,109288998,110445458,11664802
141,279268194,315268954,319330317,323438032,324694491,339022190,342278001,347720453,390783374,390887309,41
,<<182,250,15,182,209,144,18,185,87,152,52,214,190,152,21,225,82,14,227,101,251,17,16,20,255,234,209,81,16
,145,181,47,40,233,15,109,204,128>>}}
2018-09-12 01:19:47.116 [info] <0.1229.0>@aec_conductor:start_mining:645 Starting mining
(END)
```

如果log/epoch\_mining.log最后显示starting mining说明正在挖矿

## 验证你的节点是否和测试网同步

```
curl http://31.13.249.70:3013/v2/blocks/top
curl http://127.0.0.1:3013/v2/blocks/top
```

```
curl: (7) Failed to connect to 31.13.249.1 port 3013: Connection refused
yeqinfu@ubuntu:~/nodes$ curl http://31.13.249.70:3013/v2/blocks/top
{"beneficiary": "akStjnw1kcmwFqXhTga9GRjanbM3t6PnEWEtNM3ouVNRu5", "hash": "kh5ZpCAsR19mJbH5FecppPJC2LkH8zaXG8GenBQX2tqNBGP739z", "height": 4328, "miner": "akSuLwK89nwhUgqcwUC7hb8vMSNGCsCZQdE4aYBRClZSKa", "nonce": "8829364374838801604", "pow": "[2259904, 3640980, 16538917, 17139461, 36738216, 44372058, 47953929, 54075300, 84690291, 100993334, 109843533, 114060610, 120108556, 120611082, 125069591, 127694244, 145692170, 160408531, 239715948, 246384508, 259888240, 264862515, 277016404, 305300776, 312381770, 320964461, 325700070, 363263977, 367418359, 384257504, 387704528, 390654487, 399469519, 402513324, 405905776, 421399113, 425543717, 426555394, 429989890, 454121661, 490618976, 517461084]", "prev_hash": "khSoyf7B1JzenXswpRPKcB3No0NuzPacGKwRRYTL9CR12ZJuZJw", "state_hash": "bs52XnLB8f9H8sE6Ms3VXcguH0jhuTa3lRavtVjM3nQUjhZ8Bycs", "target": "538312337", "time": 1536740271302, "version": 22}
yeqinfu@ubuntu:~/nodes$ curl http://127.0.0.1:3013/v2/blocks/top
{"beneficiary": "akStjnw1kcmwFqXhTga9GRjanbM3t6PnEWEtNM3ouVNRu5", "hash": "kh5ZpCAsR19mJbH5FecppPJC2LkH8zaXG8GenBQX2tqNBGP739z", "height": 4328, "miner": "akSuLwK89nwhUgqcwUC7hb8vMSNGCsCZQdE4aYBRClZSKa", "nonce": "8829364374838801604", "pow": "[2259904, 3640980, 16538917, 17139461, 36738216, 44372058, 47953929, 54075300, 84690291, 100993334, 109843533, 114060610, 120108556, 120611082, 125069591, 127694244, 145692170, 160408531, 239715948, 246384508, 259888240, 264862515, 277016404, 305300776, 312381770, 320964461, 325700070, 363263977, 367418359, 384257504, 387704528, 390654487, 399469519, 402513324, 405905776, 421399113, 425543717, 426555394, 429989890, 454121661, 490618976, 517461084]", "prev_hash": "khSoyf7B1JzenXswpRPKcB3No0NuzPacGKwRRYTL9CR12ZJuZJw", "state_hash": "bs52XnLB8f9H8sE6Ms3VXcguH0jhuTa3lRavtVjM3nQUjhZ8Bycs", "target": "538312337", "time": 1536740271302, "version": 22}
yeqinfu@ubuntu:~/nodes$
```

比较哈希值是否一致

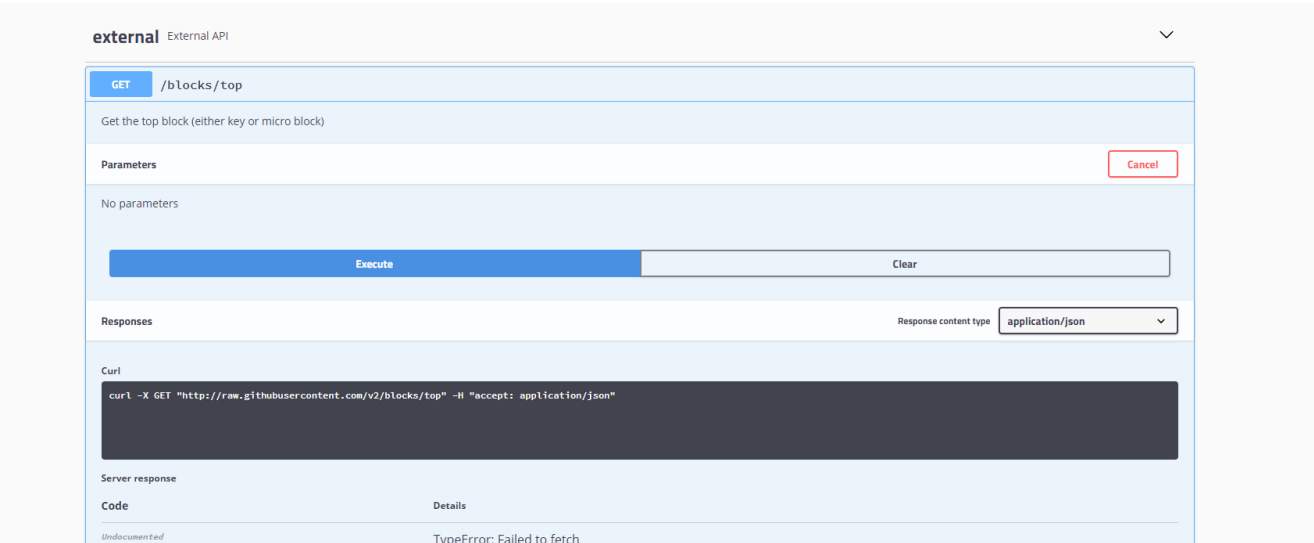
注意事项

epoch不同版本都不是向前兼容的，所以当我们看到已经挖到新的矿，想查询自己的beneficiary账户是否得到相应的奖励。可以在epoch启动的情况下执行

```
curl http://localhost:3013/v2/accounts/ak%242ibwhmwkiQpUjtAQAFEQ139CqtknJFhkpzgtqtF791dQAF3L4m
```

把账户公钥改成自己的公钥，如果你拿着自己的账户用python sdk查询可能会查不到账户余额，原因是本地的epoch版本和python sdk调用的epoch版本不一致，简单说就是不同版本在不同的链上。

epoch启动后可以根据[epoch api](#) 中展示的接口去查询所需要的信息，例如查询自己挖矿链上的最高的一个块数据



把host部分替换成 `localhost:3013` 在本地请求就可以了，更多请求接口信息可以参考[这个项目](#)。官方回复我epoch尚未暴露swagger 接口部分，可能后续会改进，就不用那么麻烦了。

备注

epoch 项目地址: <https://github.com/aeternity/epoch>

epoch-api-doc地址: <https://github.com/aeternity/epoch-api-docs>