# Cpp代码记录

## 环境搭建：

### 1：下载代码：

git clone --recursive <https://github.com/ethereum/cpp-ethereum>

或者从svn://test.eidpay.com/blockchain/ju-cpp-ethereum/trunk/cpp-ethereum 下载

### 2：安装依赖库：

cd cpp-ethereum

sh scripts/install\_deps.sh

### 3：配置

mkdir build

cd build

cmake -DCMAKE\_BUILD\_TYPE=Debug ../

### 4：编译

make

### 5: 创建目录

cd eth

mkdir config

mkdir data

把文件svn://test.eidpay.com/blockchain/ju-cpp-ethereum/trunk/piccgenesis.json，复制到目录config 下

### 6：创建账户

cd ../ethkey

./ ethkey new testkey0

### 7: 运行

cd ../eth

./eth --peers 0 --network-id 5678 --upnp off --no-discovery --json-rpc --db-path ./data --bid 99999999999999999 --unsafe-transactions --config ./config/piccgenesis.json --json-rpc --json-rpc-port 6789 --verbosity 9 -m on -t 1

## 修改记录：

## 代码流程：

### 挖矿流程：

1：在Client::rejigSealing函数里面把需要挖矿的区块数据提交给工作引擎sealEngine()->generateSeal(m\_sealingInfo);

2：工作引擎储存在BlockChain:: m\_sealEngine，在BlockChain::init中初始化：

m\_sealEngine.reset(m\_params.createSealEngine());

3：m\_params 在web3对象的定义中被传递进来：

dev::WebThreeDirect web3(

WebThreeDirect::composeClientVersion("eth"),

getDataDir(),

chainParams,

withExisting,

nodeMode == NodeMode::Full ? caps : set<string>(),

netPrefs,

&nodesState,

testingMode

);

4：m\_params在main函数中定义：

ChainParams chainParams(genesisInfo(eth::Network::Frontier), genesisStateRoot(eth::Network::Frontier));

5：m\_params 创建工作引擎的函数是：

ChainParams::createSealEngine() ，创建的代码如下：

SealEngineFace\* ret = SealEngineRegistrar::create(sealEngineName);

6：SealEngineRegistrar::create 返回在WebThreeDirect::WebThreeDirect中调用代码：

Ethash::init();

NoProof::init();

注册的工作引擎。当前版本注册了Ethash 类和NoProof 类的工作引擎。

7：以Ethash 类工作引擎为例：步骤1中的调用sealEngine()->generateSeal(m\_sealingInfo);调用到：

Ethash::generateSeal，这个函数里面设置了区块数据，并且调用函数m\_farm.start创建了矿工进行挖矿。

8：矿工由GenericFarm::m\_sealers 初始化，GenericFarm::m\_sealers在构造函数Ethash::Ethash() 中设置，代码如下：

sealers["cpu"] = GenericFarm<EthashProofOfWork>::SealerDescriptor{&EthashCPUMiner::instances, [](GenericMiner<EthashProofOfWork>::ConstructionInfo ci){ return new EthashCPUMiner(ci); }};

9：在步骤7中创建的矿工是EthashCPUMiner 类对象

10：EthashCPUMiner类是Worker类的子类，在EthashCPUMiner::workLoop中挖矿

11：矿挖好后会调用GenericMiner:: submitProof，再调用m\_farm->submitProof，m\_farm在GenericMiner构造函数中初始化， m\_farm是在步骤7中的m\_farm.start传进来的，调用的是：GenericFarm::submitProof

12: GenericFarm::submitProof 会调用到m\_onSolutionFound，m\_onSolutionFound在Ethash::Ethash中定义

### 合约接口调用失败记录

1：调用失败的时间State::addressHasCode 中的

it->second.codeHash() != EmptySHA3 为真，it->second 是Account，在State::ensureCached中创建

2：

## 执行流程：

### Generating seal 流程：

#0 dev::eth::Client::rejigSealing (this=0xe70a10) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:591

#1 0x00007ffff6c98839 in dev::eth::Client::doWork (this=0xe70a10, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:681

#2 0x00007ffff70aebff in dev::eth::Client::doWork (this=0xe70a10)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:241

#3 0x00007ffff5a592f3 in dev::Worker::workLoop (this=0xe70f08) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#4 0x00007ffff5a588b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x8ceca8)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#5 0x00007ffff5a5a3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x8ceca8) at /usr/include/c++/5/functional:1531

#6 0x00007ffff5a5a31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x8ceca8)

at /usr/include/c++/5/functional:1520

#7 0x00007ffff5a5a2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x8cec90) at /usr/include/c++/5/thread:115

#8 0x00007ffff4e64c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#9 0x00007ffff72446fa in start\_thread (arg=0x7fffe8eb4700) at pthread\_create.c:333

#10 0x00007ffff45cab5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### Sync 流程

#0 dev::eth::BlockChain::sync (this=0xe70f70, \_bq=..., \_stateDB=..., \_max=50)

at /opt/ethereum/cpp-ethereum/libethereum/BlockChain.cpp:413

#1 0x00007ffff6c95b6a in dev::eth::Client::syncBlockQueue (this=0xe70a10) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:396

#2 0x00007ffff6c9871d in dev::eth::Client::doWork (this=0xe70a10, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:664

#3 0x00007ffff70aebff in dev::eth::Client::doWork (this=0xe70a10)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:241

#4 0x00007ffff5a592f3 in dev::Worker::workLoop (this=0xe70f08) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#5 0x00007ffff5a588b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x8ce948)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#6 0x00007ffff5a5a3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x8ce948) at /usr/include/c++/5/functional:1531

#7 0x00007ffff5a5a31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x8ce948)

at /usr/include/c++/5/functional:1520

#8 0x00007ffff5a5a2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x8ce930) at /usr/include/c++/5/thread:115

#9 0x00007ffff4e64c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#10 0x00007ffff72446fa in start\_thread (arg=0x7fffe8eb4700) at pthread\_create.c:333

#11 0x00007ffff45cab5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### Import 流程

在没有交易，产生新区块的时候会进入这个流程

#0 dev::eth::BlockChain::import (this=0x9a19a0, \_block=..., \_db=..., \_mustBeNew=true)

at /opt/ethereum/cpp-ethereum/libethereum/BlockChain.cpp:650

#1 0x00007ffff6d8b324 in dev::eth::BlockChain::sync (this=0x9a19a0, \_bq=..., \_stateDB=..., \_max=50)

at /opt/ethereum/cpp-ethereum/libethereum/BlockChain.cpp:432

#2 0x00007ffff6c9883a in dev::eth::Client::syncBlockQueue (this=0x9a1440) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:396

#3 0x00007ffff6c9b3ed in dev::eth::Client::doWork (this=0x9a1440, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:664

#4 0x00007ffff70aebff in dev::eth::Client::doWork (this=0x9a1440)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:241

#5 0x00007ffff5a5d2f3 in dev::Worker::workLoop (this=0x9a1938) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#6 0x00007ffff5a5c8b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x90f688)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#7 0x00007ffff5a5e3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x90f688) at /usr/include/c++/5/functional:1531

#8 0x00007ffff5a5e31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x90f688)

at /usr/include/c++/5/functional:1520

#9 0x00007ffff5a5e2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x90f670) at /usr/include/c++/5/thread:115

#10 0x00007ffff4e68c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#11 0x00007ffff72446fa in start\_thread (arg=0x7fffe9151700) at pthread\_create.c:333

#12 0x00007ffff45ceb5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 挖矿流程：

Main 调用Client::startSealing() 通过条件变量发生信号

m\_signalled.notify\_all();

函数Client::doWork 接收信号

#0 dev::eth::EthashCPUMiner::workLoop (this=0x7fffe0010e90) at /opt/ethereum/cpp-ethereum/libethashseal/EthashCPUMiner.cpp:99

#1 0x00007ffff5a598b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x7fffe00014e8)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#2 0x00007ffff5a5b3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x7fffe00014e8) at /usr/include/c++/5/functional:1531

#3 0x00007ffff5a5b31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x7fffe00014e8)

at /usr/include/c++/5/functional:1520

#4 0x00007ffff5a5b2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x7fffe00014d0) at /usr/include/c++/5/thread:115

#5 0x00007ffff4e65c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#6 0x00007ffff72446fa in start\_thread (arg=0x7fffdb7fe700) at pthread\_create.c:333

#7 0x00007ffff45cbb5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 挖矿成功提交流程：

#0 dev::eth::Client::submitSealed (this=0xe70a10, \_header=std::vector of length 536, capacity 890 = {...})

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:810

#1 0x00007ffff6c98c02 in dev::eth::Client::<lambda(const bytes&)>::operator()(const dev::bytes &) const (\_\_closure=0xe6fc50,

header=std::vector of length 536, capacity 890 = {...}) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:618

#2 0x00007ffff6c9ba31 in std::\_Function\_handler<void(const std::vector<unsigned char, std::allocator<unsigned char> >&), dev::eth::Client::rejigSealing()::<lambda(const bytes&)> >::\_M\_invoke(const std::\_Any\_data &, const std::vector<unsigned char, std::allocator<unsigned char> > &) (\_\_functor=..., \_\_args#0=std::vector of length 536, capacity 890 = {...}) at /usr/include/c++/5/functional:1871

#3 0x00007ffff70e6673 in std::function<void (std::vector<unsigned char, std::allocator<unsigned char> > const&)>::operator()(std::vector<unsigned char, std::allocator<unsigned char> > const&) const (this=0xe6fc50,

\_\_args#0=std::vector of length 536, capacity 890 = {...}) at /usr/include/c++/5/functional:2267

#4 0x00007ffff70dc3b3 in dev::eth::Ethash::Ethash()::{lambda(dev::eth::EthashProofOfWork::Solution const&)#3}::operator()(dev::eth::EthashProofOfWork::Solution const&) const () at /opt/ethereum/cpp-ethereum/libethashseal/Ethash.cpp:59

#5 0x00007ffff70e0eaa in std::\_Function\_handler<bool(const dev::eth::EthashProofOfWork::Solution&), dev::eth::Ethash::Ethash()::<lambda(const dev::eth::EthashProofOfWork::Solution&)> >::\_M\_invoke(const std::\_Any\_data &, const dev::eth::EthashProofOfWork::Solution &) (\_\_functor=..., \_\_args#0=...) at /usr/include/c++/5/functional:1857

#6 0x000000000067e2fb in std::function<bool (dev::eth::EthashProofOfWork::Solution const&)>::operator()(dev::eth::EthashProofOfWork::Solution const&) const (this=0xe6f890, \_\_args#0=...) at /usr/include/c++/5/functional:2267

#7 0x000000000067c140 in dev::eth::GenericFarm<dev::eth::EthashProofOfWork>::submitProof (this=0xe6f580, \_s=..., \_m=0x7fffe0002020)

at /opt/ethereum/cpp-ethereum/eth/../libethereum/GenericFarm.h:168

#8 0x00007ffff70cb7b0 in dev::eth::GenericMiner<dev::eth::EthashProofOfWork>::submitProof (this=0x7fffe0002020, \_s=...)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/GenericMiner.h:140

#9 0x00007ffff70ca507 in dev::eth::EthashCPUMiner::workLoop (this=0x7fffe0002020)

at /opt/ethereum/cpp-ethereum/libethashseal/EthashCPUMiner.cpp:101

---Type <return> to continue, or q <return> to quit---

#10 0x00007ffff5a5a8b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x7fffe0001d58)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#11 0x00007ffff5a5c3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x7fffe0001d58) at /usr/include/c++/5/functional:1531

#12 0x00007ffff5a5c31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x7fffe0001d58)

at /usr/include/c++/5/functional:1520

#13 0x00007ffff5a5c2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x7fffe0001d40) at /usr/include/c++/5/thread:115

#14 0x00007ffff4e66c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#15 0x00007ffff72446fa in start\_thread (arg=0x7fffdb7fe700) at pthread\_create.c:333

#16 0x00007ffff45ccb5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 线程创建流程：

#### 1： eth 线程创建流程

#0 dev::Worker::startWorking (this=0xe70f08) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:33

#1 0x00007ffff6c9491f in dev::eth::Client::init (this=0xe70a10, \_extNet=0x7fffffffdc68, \_dbPath="./data",

\_forceAction=dev::WithExisting::Trust, \_networkId=...) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:117

#2 0x00007ffff6c93dda in dev::eth::Client::Client (this=0xe70a10, \_params=..., \_networkID=0, \_host=0x7fffffffdc68,

\_gpForAdoption=std::shared\_ptr (count -9088, weak 32766) 0x7fffffffa880, \_dbPath="./data",

\_forceAction=dev::WithExisting::Trust, \_l=...) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:76

#3 0x00007ffff70a9a03 in dev::eth::EthashClient::EthashClient (this=0xe70a10, \_params=..., \_networkID=0, \_host=0x7fffffffdc68,

\_gpForAdoption=std::shared\_ptr (count -9088, weak 32766) 0x7fffffffa920, \_dbPath="./data",

\_forceAction=dev::WithExisting::Trust, \_limits=...) at /opt/ethereum/cpp-ethereum/libethashseal/EthashClient.cpp:54

#4 0x00007ffff7f86df7 in dev::WebThreeDirect::WebThreeDirect (this=0x7fffffffdc40,

\_clientVersion="eth/v1.3.0/Linux/g++/Interpreter/Debug/b24e8bee\*/", \_dbPath="./data", \_params=...,

\_we=dev::WithExisting::Trust, \_interfaces=std::set with 1 elements = {...}, \_n=..., \_network=..., \_testing=false)

at /opt/ethereum/cpp-ethereum/libwebthree/WebThree.cpp:63

#5 0x00000000005ee3de in main (argc=27, argv=0x7fffffffe368) at /opt/ethereum/cpp-ethereum/eth/main.cpp:1047

#### 2：txcheck 线程创建流程：

创建

#0 dev::eth::TransactionQueue::TransactionQueue (this=0xe70a20, \_limit=1024, \_futureLimit=1024)

at /opt/ethereum/cpp-ethereum/libethereum/TransactionQueue.cpp:43

#1 0x00007ffff6ca092f in dev::eth::TransactionQueue::TransactionQueue (this=0xe70a20, \_l=...)

at /opt/ethereum/cpp-ethereum/libethereum/TransactionQueue.h:57

#2 0x00007ffff6ca0dfb in dev::eth::ClientBase::ClientBase (this=0xe70a10, \_l=...)

at /opt/ethereum/cpp-ethereum/libethereum/ClientBase.h:79

#3 0x00007ffff6c9395c in dev::eth::Client::Client (this=0xe70a10, \_params=..., \_networkID=0, \_host=0x7fffffffdc68,

\_gpForAdoption=std::shared\_ptr (count -9088, weak 32766) 0x7fffffffa880, \_dbPath="./data",

\_forceAction=dev::WithExisting::Trust, \_l=...) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:74

#4 0x00007ffff70a9a03 in dev::eth::EthashClient::EthashClient (this=0xe70a10, \_params=..., \_networkID=0, \_host=0x7fffffffdc68,

\_gpForAdoption=std::shared\_ptr (count -9088, weak 32766) 0x7fffffffa920, \_dbPath="./data",

\_forceAction=dev::WithExisting::Trust, \_limits=...) at /opt/ethereum/cpp-ethereum/libethashseal/EthashClient.cpp:54

#5 0x00007ffff7f86df7 in dev::WebThreeDirect::WebThreeDirect (this=0x7fffffffdc40,

\_clientVersion="eth/v1.3.0/Linux/g++/Interpreter/Debug/b24e8bee\*/", \_dbPath="./data", \_params=...,

\_we=dev::WithExisting::Trust, \_interfaces=std::set with 1 elements = {...}, \_n=..., \_network=..., \_testing=false)

at /opt/ethereum/cpp-ethereum/libwebthree/WebThree.cpp:63

#6 0x00000000005ee3de in main (argc=27, argv=0x7fffffffe368) at /opt/ethereum/cpp-ethereum/eth/main.cpp:1047

### 交易插入区块流程：

#0 dev::eth::Block::execute(std::vector<dev::FixedHash<32u>, std::allocator<dev::FixedHash<32u> > > const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0xe74210, \_lh=std::vector of length 256, capacity 256 = {...}, \_t=...,

\_p=dev::eth::Permanence::Committed, \_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:664

#1 0x00007ffff6c192a2 in dev::eth::Block::sync (this=0xe74210, \_bc=..., \_tq=..., \_gp=..., msTimeout=100)

at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:332

#2 0x00007ffff6c962e7 in dev::eth::Client::syncTransactionQueue (this=0xe70a10)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:428

#3 0x00007ffff6c98b75 in dev::eth::Client::doWork (this=0xe70a10, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:680

#4 0x00007ffff70aebff in dev::eth::Client::doWork (this=0xe70a10)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:241

#5 0x00007ffff5a5a2f3 in dev::Worker::workLoop (this=0xe70f08) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#6 0x00007ffff5a598b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x8d3648)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#7 0x00007ffff5a5b3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x8d3648) at /usr/include/c++/5/functional:1531

---Type <return> to continue, or q <return> to quit---

#8 0x00007ffff5a5b31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x8d3648)

at /usr/include/c++/5/functional:1520

#9 0x00007ffff5a5b2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x8d3630) at /usr/include/c++/5/thread:115

#10 0x00007ffff4e65c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#11 0x00007ffff72446fa in start\_thread (arg=0x7fffe914e700) at pthread\_create.c:333

#12 0x00007ffff45cbb5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

发布合约gas不足流程：

#0 dev::eth::Executive::initialize (this=0x7fffe914bf70, \_transaction=...)

at /opt/ethereum/cpp-ethereum/libethereum/Executive.cpp:228

#1 0x00007ffff6d49300 in dev::eth::State::execute(dev::eth::EnvInfo const&, dev::eth::SealEngineFace\*, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x9a4b80, \_envInfo=..., \_sealEngine=0xe6ef60, \_t=..., \_p=dev::eth::Permanence::Committed,

\_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/State.cpp:485

#2 0x00007ffff6c1c544 in dev::eth::Block::execute(std::vector<dev::FixedHash<32u>, std::allocator<dev::FixedHash<32u> > > const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x9a4b80, \_lh=std::vector of length 256, capacity 256 = {...}, \_t=...,

\_p=dev::eth::Permanence::Committed, \_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:662

#3 0x00007ffff6c19322 in dev::eth::Block::sync (this=0x9a4b80, \_bc=..., \_tq=..., \_gp=..., msTimeout=100)

---Type <return> to continue, or q <return> to quit---

at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:332

#4 0x00007ffff6c96367 in dev::eth::Client::syncTransactionQueue (this=0x9a1380)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:428

#5 0x00007ffff6c98c0d in dev::eth::Client::doWork (this=0x9a1380, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:680

#6 0x00007ffff70aebff in dev::eth::Client::doWork (this=0x9a1380)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:241

#7 0x00007ffff5a5a2f3 in dev::Worker::workLoop (this=0x9a1878) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#8 0x00007ffff5a598b7 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0xe77e68)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#9 0x00007ffff5a5b3b2 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0xe77e68) at /usr/include/c++/5/functional:1531

#10 0x00007ffff5a5b31b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0xe77e68)

at /usr/include/c++/5/functional:1520

#11 0x00007ffff5a5b2ba in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0xe77e50) at /usr/include/c++/5/thread:115

#12 0x00007ffff4e65c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#13 0x00007ffff72446fa in start\_thread (arg=0x7fffe914e700) at pthread\_create.c:333

#14 0x00007ffff45cbb5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 交易完成丢弃流程：

#0 dev::eth::Client::onChainChanged (this=0xe71870, \_ir=...) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:552

#1 0x00007ffff6c95fa6 in dev::eth::Client::syncBlockQueue (this=0xe71870) at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:410

#2 0x00007ffff6c9885b in dev::eth::Client::doWork (this=0xe71870, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:664

#3 0x00007ffff70af099 in dev::eth::Client::doWork (this=0xe71870)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:242

#4 0x00007ffff5a57373 in dev::Worker::workLoop (this=0xe71d68) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#5 0x00007ffff5a56937 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x8f4c28)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#6 0x00007ffff5a58432 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x8f4c28) at /usr/include/c++/5/functional:1531

#7 0x00007ffff5a5839b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x8f4c28)

at /usr/include/c++/5/functional:1520

#8 0x00007ffff5a5833a in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x8f4c10) at /usr/include/c++/5/thread:115

#9 0x00007ffff4e60c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#10 0x00007ffff72446fa in start\_thread (arg=0x7fffe914a700) at pthread\_create.c:333

#11 0x00007ffff45c6b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 合约提交流程：

#0 dev::eth::VM::execImpl(boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&, dev::eth::ExtVMFace&, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x7fffe01cf7e0, io\_gas=..., \_ext=..., \_onOp=...)

at /opt/ethereum/cpp-ethereum/libevm/VM.cpp:135

#1 0x00007ffff6d343b8 in dev::eth::VMFace::exec(boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&, dev::eth::ExtVMFace&, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x7fffe01cf7e0, io\_gas=..., \_ext=..., \_onOp=...)

at /opt/ethereum/cpp-ethereum/libethereum/../libevm/VMFace.h:57

#2 0x00007ffff6d327f1 in dev::eth::Executive::go(std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::mul---Type <return> to continue, or q <return> to quit---

tiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x7fffe90bef70, \_onOp=...)

at /opt/ethereum/cpp-ethereum/libethereum/Executive.cpp:351

#3 0x00007ffff6d4a033 in dev::eth::State::execute(dev::eth::EnvInfo const&, dev::eth::SealEngineFace\*, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0xe75050, \_envInfo=..., \_sealEngine=0xe761b0, \_t=..., \_p=dev::eth::Permanence::Committed,

\_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/State.cpp:494

#4 0x00007ffff6c1ef04 in dev::eth::Block::execute(std::vector<dev::FixedHash<32u>, std::allocator<dev::FixedHash<32u> > > const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::---Type <return> to continue, or q <return> to quit---

multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0xe75050, \_lh=std::vector of length 256, capacity 256 = {...}, \_t=...,

\_p=dev::eth::Permanence::Committed, \_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:657

#5 0x00007ffff6c1bce2 in dev::eth::Block::sync (this=0xe75050, \_bc=..., \_tq=..., \_gp=..., msTimeout=100)

at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:332

#6 0x00007ffff6c98d35 in dev::eth::Client::syncTransactionQueue (this=0xe71850)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:428

#7 0x00007ffff6c9b51f in dev::eth::Client::doWork (this=0xe71850, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:677

#8 0x00007ffff70af099 in dev::eth::Client::doWork (this=0xe71850)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:242

#9 0x00007ffff5a5b373 in dev::Worker::workLoop (this=0xe71d48) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#10 0x00007ffff5a5a937 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x8f0f68)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#11 0x00007ffff5a5c432 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x8f0f68) at /usr/include/c++/5/functional:1531

#12 0x00007ffff5a5c39b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x8f0f68)

at /usr/include/c++/5/functional:1520

#13 0x00007ffff5a5c33a in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x8f0f50) at /usr/include/c++/5/thread:115

#14 0x00007ffff4e64c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

---Type <return> to continue, or q <return> to quit---

#15 0x00007ffff72446fa in start\_thread (arg=0x7fffe90c1700) at pthread\_create.c:333

#16 0x00007ffff45cab5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 正常交易执行流程：

#0 dev::eth::VM::execImpl(boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&, dev::eth::ExtVMFace&, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x7fffe01791e0, io\_gas=..., \_ext=..., \_onOp=...)

at /opt/ethereum/cpp-ethereum/libevm/VM.cpp:135

#1 0x00007ffff6d343b8 in dev::eth::VMFace::exec(boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&, dev::eth::ExtVMFace&, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x7fffe01791e0, io\_gas=..., \_ext=..., \_onOp=...)

at /opt/ethereum/cpp-ethereum/libethereum/../libevm/VMFace.h:57

#2 0x00007ffff6d32ae9 in dev::eth::Executive::go(std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::mul---Type <return> to continue, or q <return> to quit---

tiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x7fffe90bef70, \_onOp=...)

at /opt/ethereum/cpp-ethereum/libethereum/Executive.cpp:382

#3 0x00007ffff6d4a033 in dev::eth::State::execute(dev::eth::EnvInfo const&, dev::eth::SealEngineFace\*, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0xe75050, \_envInfo=..., \_sealEngine=0xe761b0, \_t=..., \_p=dev::eth::Permanence::Committed,

\_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/State.cpp:494

#4 0x00007ffff6c1ef04 in dev::eth::Block::execute(std::vector<dev::FixedHash<32u>, std::allocator<dev::FixedHash<32u> > > const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::---Type <return> to continue, or q <return> to quit---

multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0xe75050, \_lh=std::vector of length 256, capacity 256 = {...}, \_t=...,

\_p=dev::eth::Permanence::Committed, \_onOp=...) at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:657

#5 0x00007ffff6c1bce2 in dev::eth::Block::sync (this=0xe75050, \_bc=..., \_tq=..., \_gp=..., msTimeout=100)

at /opt/ethereum/cpp-ethereum/libethereum/Block.cpp:332

#6 0x00007ffff6c98d35 in dev::eth::Client::syncTransactionQueue (this=0xe71850)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:428

#7 0x00007ffff6c9b51f in dev::eth::Client::doWork (this=0xe71850, \_doWait=true)

at /opt/ethereum/cpp-ethereum/libethereum/Client.cpp:677

#8 0x00007ffff70af099 in dev::eth::Client::doWork (this=0xe71850)

at /opt/ethereum/cpp-ethereum/libethashseal/../libethereum/Client.h:242

#9 0x00007ffff5a5b373 in dev::Worker::workLoop (this=0xe71d48) at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:120

#10 0x00007ffff5a5a937 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x8f0f68)

at /opt/ethereum/cpp-ethereum/libdevcore/Worker.cpp:56

#11 0x00007ffff5a5c432 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x8f0f68) at /usr/include/c++/5/functional:1531

#12 0x00007ffff5a5c39b in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x8f0f68)

at /usr/include/c++/5/functional:1520

#13 0x00007ffff5a5c33a in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x8f0f50) at /usr/include/c++/5/thread:115

#14 0x00007ffff4e64c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

---Type <return> to continue, or q <return> to quit---

#15 0x00007ffff72446fa in start\_thread (arg=0x7fffe90c1700) at pthread\_create.c:333

#16 0x00007ffff45cab5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### RPC交接处理流程：

#0 dev::rpc::Eth::eth\_sendTransaction[abi:cxx11](Json::Value const&) (this=0x9066b0, \_json=...)

at /opt/ethereum/cpp-ethereum/libweb3jsonrpc/Eth.cpp:260

#1 0x00007ffff76b1e2c in dev::rpc::EthFace::eth\_sendTransactionI (this=0x9066b0, request=..., response=...)

at /opt/ethereum/cpp-ethereum/libweb3jsonrpc/EthFace.h:148

#2 0x000000000067be47 in ModularServer<dev::rpc::EthFace, dev::rpc::DBFace, dev::rpc::WhisperFace, dev::rpc::NetFace, dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x8f6200, \_proc=..., \_input=..., \_output=...)

at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:160

#3 0x00007ffff615365f in jsonrpc::AbstractProtocolHandler::ProcessRequest(Json::Value const&, Json::Value&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#4 0x00007ffff6158e6b in jsonrpc::RpcProtocolServerV2::HandleSingleRequest(Json::Value const&, Json::Value&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#5 0x00007ffff6158d4c in jsonrpc::RpcProtocolServerV2::HandleJsonRequest(Json::Value const&, Json::Value&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#6 0x00007ffff6153329 in jsonrpc::AbstractProtocolHandler::HandleRequest(std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> > const&, std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#7 0x00007ffff615abed in jsonrpc::HttpServer::callback(void\*, MHD\_Connection\*, char const\*, char const\*, char const\*, char const\*, unsigned long\*, void\*\*) () from /usr/local/lib/libjsonrpccpp-server.so.0

#8 0x00007ffff403f344 in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#9 0x00007ffff40403fc in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#10 0x00007ffff4045da9 in MHD\_run\_from\_select () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#11 0x00007ffff40460b6 in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

---Type <return> to continue, or q <return> to quit---

#12 0x00007ffff4046222 in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#13 0x00007ffff72446fa in start\_thread (arg=0x7fffdbfff700) at pthread\_create.c:333

#14 0x00007ffff45c7b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 创建账户流程：

#0 dev::rpc::Personal::personal\_newAccount (this=0x97c040, \_password="1111")

at /opt/ethereum/cpp-ethereum/libweb3jsonrpc/Personal.cpp:25

#1 0x00007ffff76225e8 in dev::rpc::PersonalFace::personal\_newAccountI (this=0x97c040, request=..., response=...)

at /opt/ethereum/cpp-ethereum/libweb3jsonrpc/PersonalFace.h:26

#2 0x000000000067c81f in ModularServer<dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x97eea0, \_proc=..., \_input=..., \_output=...)

at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:160

#3 0x000000000067c657 in ModularServer<dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x97eea0, \_proc=..., \_input=...,

\_output=...) at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:162

#4 0x000000000067c475 in ModularServer<dev::rpc::NetFace, dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x97eea0, \_proc=...,

\_input=..., \_output=...) at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:162

#5 0x000000000067c293 in ModularServer<dev::rpc::WhisperFace, dev::rpc::NetFace, dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (

this=0x97eea0, \_proc=..., \_input=..., \_output=...) at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:162

#6 0x000000000067c0b1 in ModularServer<dev::rpc::DBFace, dev::rpc::WhisperFace, dev::rpc::NetFace, dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x97eea0, \_proc=..., \_input=..., \_output=...)

at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:162

#7 0x000000000067be61 in ModularServer<dev::rpc::EthFace, dev::rpc::DBFace, dev::rpc::WhisperFace, dev::rpc::NetFace, dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x97eea0, \_proc=..., \_input=..., \_output=...)

---Type <return> to continue, or q <return> to quit---

at /opt/ethereum/cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:162

#8 0x00007ffff615365f in jsonrpc::AbstractProtocolHandler::ProcessRequest(Json::Value const&, Json::Value&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#9 0x00007ffff6158e6b in jsonrpc::RpcProtocolServerV2::HandleSingleRequest(Json::Value const&, Json::Value&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#10 0x00007ffff6158d4c in jsonrpc::RpcProtocolServerV2::HandleJsonRequest(Json::Value const&, Json::Value&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#11 0x00007ffff6153329 in jsonrpc::AbstractProtocolHandler::HandleRequest(std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> > const&, std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >&) ()

from /usr/local/lib/libjsonrpccpp-server.so.0

#12 0x00007ffff6159bb4 in jsonrpc::AbstractServerConnector::OnRequest(std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> > const&, void\*) () from /usr/local/lib/libjsonrpccpp-server.so.0

#13 0x00007ffff76a2f74 in dev::IpcServerBase<int>::GenerateResponse (this=0x98c280, \_connection=26)

at /opt/ethereum/cpp-ethereum/libweb3jsonrpc/IpcServerBase.cpp:145

#14 0x00007ffff7681426 in dev::UnixDomainSocketServer::<lambda()>::operator()(void) const (\_\_closure=0x7fffcc000928)

at /opt/ethereum/cpp-ethereum/libweb3jsonrpc/UnixSocketServer.cpp:120

#15 0x00007ffff76826be in std::\_Bind\_simple<dev::UnixDomainSocketServer::Listen()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x7fffcc000928) at /usr/include/c++/5/functional:1531

#16 0x00007ffff7682627 in std::\_Bind\_simple<dev::UnixDomainSocketServer::Listen()::<lambda()>()>::operator()(void) (

this=0x7fffcc000928) at /usr/include/c++/5/functional:1520

#17 0x00007ffff76825c6 in std::thread::\_Impl<std::\_Bind\_simple<dev::UnixDomainSocketServer::Listen()::<lambda()>()> >::\_M\_run(void)

(this=0x7fffcc000910) at /usr/include/c++/5/thread:115

#18 0x00007ffff4e61c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

---Type <return> to continue, or q <return> to quit---

#19 0x00007ffff72446fa in start\_thread (arg=0x7fffdb7fe700) at pthread\_create.c:333

#20 0x00007ffff45c7b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### P2P创建连接流程：

#0 dev::p2p::Host::startPeerSession(dev::FixedHash<64u> const&, dev::RLP const&, std::unique\_ptr<dev::p2p::RLPXFrameCoder, std::default\_delete<dev::p2p::RLPXFrameCoder> >&&, std::shared\_ptr<dev::p2p::RLPXSocket> const&) (this=0x7fffffffdc38, \_id=..., \_rlp=...,

\_io=<unknown type in /opt/ju-cpp-ethereum/build/libp2p/libp2p.so, CU 0x400c7f, DIE 0x49e4db>,

\_s=std::shared\_ptr (count 1, weak 1) 0x7fffd4114a20) at /opt/ju-cpp-ethereum/libp2p/Host.cpp:259

#1 0x00007ffff680a994 in dev::p2p::RLPXHandshake::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)>::operator()(boost::system::error\_code, std::size\_t) const (\_\_closure=0x7fffe91a96a8, ec=...)

at /opt/ju-cpp-ethereum/libp2p/RLPxHandshake.cpp:400

#2 0x00007ffff680db70 in boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >::operator()(const boost::system::error\_code &, std::size\_t, int) (this=0x7fffe91a9680, ec=..., bytes\_transferred=160, start=0)

at /usr/include/boost/asio/impl/read.hpp:282

#3 0x00007ffff68141dc in boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>::operator()(void) (this=0x7fffe91a9680)

at /usr/include/boost/asio/detail/bind\_handler.hpp:127

#4 0x00007ffff6813f9d in boost::asio::asio\_handler\_invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, ...) (

function=...) at /usr/include/boost/asio/handler\_invoke\_hook.hpp:69

#5 0x00007ffff6813b58 in boost\_asio\_handler\_invoke\_helpers::invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::---Type <return> to continue, or q <return> to quit---

asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, dev::p2p::RLPXHandshake::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> &) (function=..., context=...) at /usr/include/boost/asio/detail/handler\_invoke\_helpers.hpp:37

#6 0x00007ffff6813650 in boost::asio::detail::asio\_handler\_invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > \*) (

function=..., this\_handler=0x7fffe91a9680) at /usr/include/boost/asio/impl/read.hpp:502

#7 0x00007ffff6813110 in boost\_asio\_handler\_invoke\_helpers::invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost:---Type <return> to continue, or q <return> to quit---

:asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > &) (function=..., context=...) at /usr/include/boost/asio/detail/handler\_invoke\_helpers.hpp:37

#8 0x00007ffff6812415 in boost::asio::detail::reactive\_socket\_recv\_op<boost::asio::mutable\_buffers\_1, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > >::do\_complete(boost::asio::detail::io\_service\_impl \*, boost::asio::detail::operation \*, const boost::system::error\_code &, std::size\_t) (owner=0xe7b370, base=0x7fffd4118860)

at /usr/include/boost/asio/detail/reactive\_socket\_recv\_op.hpp:110

#9 0x00007ffff6831c10 in boost::asio::detail::task\_io\_service\_operation::complete (this=0x7fffd4118860, owner=..., ec=...,

bytes\_transferred=0) at /usr/include/boost/asio/detail/task\_io\_service\_operation.hpp:38

#10 0x00007ffff6832c64 in boost::asio::detail::task\_io\_service::do\_run\_one (this=0xe7b370, lock=..., this\_thread=..., ec=...)

at /usr/include/boost/asio/detail/impl/task\_io\_service.ipp:372

#11 0x00007ffff6832980 in boost::asio::detail::task\_io\_service::run (this=0xe7b370, ec=...)

at /usr/include/boost/asio/detail/impl/task\_io\_service.ipp:149

#12 0x00007ffff6832ec1 in boost::asio::io\_service::run (this=0x7fffffffdd88) at /usr/include/boost/asio/impl/io\_service.ipp:59

#13 0x00007ffff6893be3 in dev::p2p::Host::doWork (this=0x7fffffffdc38) at /opt/ju-cpp-ethereum/libp2p/Host.cpp:766

#14 0x00007ffff62a0131 in dev::Worker::workLoop (this=0x7fffffffdc38) at /opt/ju-cpp-ethereum/libdevcore/Worker.cpp:120

#15 0x00007ffff629f6f5 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x11f3188)

at /opt/ju-cpp-ethereum/libdevcore/Worker.cpp:56

---Type <return> to continue, or q <return> to quit---

#16 0x00007ffff62a11f0 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x11f3188) at /usr/include/c++/5/functional:1531

#17 0x00007ffff62a1159 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x11f3188)

at /usr/include/c++/5/functional:1520

#18 0x00007ffff62a10f8 in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x11f3170) at /usr/include/c++/5/thread:115

#19 0x00007ffff543cc80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#20 0x00007ffff78a96fa in start\_thread (arg=0x7fffe91aa700) at pthread\_create.c:333

#21 0x00007ffff4ba2b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### perrs节点因为创始去看hash不一致而被禁用流程：

#0 dev::p2p::Capability::disable (this=0x7fffd411a4d0, \_problem="Invalid genesis hash")

at /opt/ju-cpp-ethereum/libp2p/Capability.cpp:39

#1 0x00007ffff734a54c in dev::eth::BlockChainSync::onPeerStatus (this=0x11f2f30, \_peer=

std::shared\_ptr (count 5, weak 1) 0x7fffd411a4d0) at /opt/ju-cpp-ethereum/libethereum/BlockChainSync.cpp:194

#2 0x00007ffff74281a6 in dev::eth::EthereumHost::onPeerStatus (this=0x11f11e0,

\_peer=std::shared\_ptr (count 5, weak 1) 0x7fffd411a4d0) at /opt/ju-cpp-ethereum/libethereum/EthereumHost.cpp:273

#3 0x00007ffff731c741 in dev::eth::EthereumPeer::interpret (this=0x7fffd411a4d0, \_id=0, \_r=...)

at /opt/ju-cpp-ethereum/libethereum/EthereumPeer.cpp:244

#4 0x00007ffff6870d91 in dev::p2p::Session::readPacket (this=0x7fffd4116830, \_capId=0, \_t=dev::p2p::UserPacket, \_r=...)

at /opt/ju-cpp-ethereum/libp2p/Session.cpp:179

#5 0x00007ffff6872c31 in dev::p2p::Session::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)>::operator()(boost::system::error\_code, std::size\_t) const (\_\_closure=0x7fffe91a96a8, ec=..., length=96)

at /opt/ju-cpp-ethereum/libp2p/Session.cpp:484

#6 0x00007ffff687577e in boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >::operator()(const boost::system::error\_code &, std::size\_t, int) (this=0x7fffe91a9680, ec=..., bytes\_transferred=96, start=0)

at /usr/include/boost/asio/impl/read.hpp:282

#7 0x00007ffff6879766 in boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>::operator()(void) (this=0x7fffe91a9680)

at /usr/include/boost/asio/detail/bind\_handler.hpp:127

#8 0x00007ffff6879589 in boost::asio::asio\_handler\_invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code,---Type <return> to continue, or q <return> to quit---

long unsigned int> >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, ...) (function=...) at /usr/include/boost/asio/handler\_invoke\_hook.hpp:69

#9 0x00007ffff68792c2 in boost\_asio\_handler\_invoke\_helpers::invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, dev::p2p::Session::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> &) (function=..., context=...) at /usr/include/boost/asio/detail/handler\_invoke\_helpers.hpp:37

#10 0x00007ffff6878fda in boost::asio::detail::asio\_handler\_invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > \*) (

function=..., this\_handler=0x7fffe91a9680) at /usr/include/boost/asio/impl/read.hpp:502

#11 0x00007ffff6878b20 in boost\_asio\_handler\_invoke\_helpers::invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::---Type <return> to continue, or q <return> to quit---

asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > >(boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> &, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > &) (function=..., context=...) at /usr/include/boost/asio/detail/handler\_invoke\_helpers.hpp:37

#12 0x00007ffff6877fdf in boost::asio::detail::reactive\_socket\_recv\_op<boost::asio::mutable\_buffers\_1, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::Session::doRead()::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > >::do\_complete(boost::asio::detail::io\_service\_impl \*, boost::asio::detail::operation \*, const boost::system::error\_code &, std::size\_t) (owner=0xe7c1a0, base=0x7fffd40042e0)

at /usr/include/boost/asio/detail/reactive\_socket\_recv\_op.hpp:110

#13 0x00007ffff6831c10 in boost::asio::detail::task\_io\_service\_operation::complete (this=0x7fffd40042e0, owner=..., ec=...,

bytes\_transferred=0) at /usr/include/boost/asio/detail/task\_io\_service\_operation.hpp:38

#14 0x00007ffff6832c64 in boost::asio::detail::task\_io\_service::do\_run\_one (this=0xe7c1a0, lock=..., this\_thread=..., ec=...)

at /usr/include/boost/asio/detail/impl/task\_io\_service.ipp:372

#15 0x00007ffff6832980 in boost::asio::detail::task\_io\_service::run (this=0xe7c1a0, ec=...)

at /usr/include/boost/asio/detail/impl/task\_io\_service.ipp:149

#16 0x00007ffff6832ec1 in boost::asio::io\_service::run (this=0x7fffffffdd88) at /usr/include/boost/asio/impl/io\_service.ipp:59

#17 0x00007ffff6893be3 in dev::p2p::Host::doWork (this=0x7fffffffdc38) at /opt/ju-cpp-ethereum/libp2p/Host.cpp:766

#18 0x00007ffff62a0131 in dev::Worker::workLoop (this=0x7fffffffdc38) at /opt/ju-cpp-ethereum/libdevcore/Worker.cpp:120

---Type <return> to continue, or q <return> to quit---

#19 0x00007ffff629f6f5 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x11f3278)

at /opt/ju-cpp-ethereum/libdevcore/Worker.cpp:56

#20 0x00007ffff62a11f0 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (

this=0x11f3278) at /usr/include/c++/5/functional:1531

#21 0x00007ffff62a1159 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x11f3278)

at /usr/include/c++/5/functional:1520

#22 0x00007ffff62a10f8 in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (

this=0x11f3260) at /usr/include/c++/5/thread:115

#23 0x00007ffff543cc80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#24 0x00007ffff78a96fa in start\_thread (arg=0x7fffe91aa700) at pthread\_create.c:333

#25 0x00007ffff4ba2b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 交易call调用流程：

#0 dev::eth::ClientBase::call (this=0x15da790, \_from=..., \_value=..., \_dest=...,

\_data=std::vector of length 36, capacity 36 = {...}, \_gas=..., \_gasPrice=..., \_blockNumber=4294967294,

\_ff=dev::eth::FudgeFactor::Lenient) at /opt/ju-cpp-ethereum/libethereum/ClientBase.cpp:65

#1 0x0000000000e60dbd in dev::rpc::Eth::eth\_call (this=0x15d90f0, \_json=..., \_blockNumber="latest")

at /opt/ju-cpp-ethereum/libweb3jsonrpc/Eth.cpp:357

#2 0x0000000000e6994c in dev::rpc::EthFace::eth\_callI (this=0x15d90f0, request=..., response=...)

at /opt/ju-cpp-ethereum/libweb3jsonrpc/EthFace.h:152

#3 0x0000000000e00957 in ModularServer<dev::rpc::EthFace, dev::rpc::DBFace, dev::rpc::WhisperFace, dev::rpc::NetFace, dev::rpc::Web3Face, dev::rpc::PersonalFace, dev::rpc::AdminEthFace, dev::rpc::AdminNetFace, dev::rpc::AdminUtilsFace, dev::rpc::DebugFace, dev::rpc::TestFace>::HandleMethodCall (this=0x160aa60, \_proc=..., \_input=..., \_output=...)

at /opt/ju-cpp-ethereum/eth/../libweb3jsonrpc/ModularServer.h:160

#4 0x00000000011e984f in jsonrpc::AbstractProtocolHandler::ProcessRequest(Json::Value const&, Json::Value&) ()

#5 0x00000000011ec40e in jsonrpc::RpcProtocolServerV2::HandleSingleRequest(Json::Value const&, Json::Value&) ()

#6 0x00000000011ec73e in jsonrpc::RpcProtocolServerV2::HandleJsonRequest(Json::Value const&, Json::Value&) ()

#7 0x00000000011e8b93 in jsonrpc::AbstractProtocolHandler::HandleRequest(std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> > const&, std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >&) ()

#8 0x00000000011e7cd0 in jsonrpc::HttpServer::callback(void\*, MHD\_Connection\*, char const\*, char const\*, char const\*, char const\*, unsigned long\*, void\*\*) ()

#9 0x00007ffff5a51344 in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#10 0x00007ffff5a523fc in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#11 0x00007ffff5a57da9 in MHD\_run\_from\_select () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#12 0x00007ffff5a580b6 in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#13 0x00007ffff5a58222 in ?? () from /usr/lib/x86\_64-linux-gnu/libmicrohttpd.so.10

#14 0x00007ffff7bc16fa in start\_thread (arg=0x7fffe4ff9700) at pthread\_create.c:333

#15 0x00007ffff4c79b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### resetCurrent 流程：

#0 dev::eth::Block::resetCurrent (this=this@entry=0x7fffeae8a230, \_timestamp=...) at /mnt/src/cpp-ethereum/libethereum/Block.cpp:118

#1 0x00007ffff789d1dc in dev::eth::Block::sync (this=this@entry=0x7fffeae8a230, \_bc=..., \_block=..., \_bi=...) at /mnt/src/cpp-ethereum/libethereum/Block.cpp:264

#2 0x00007ffff78a34e9 in dev::eth::Block::enactOn (this=this@entry=0x7fffeae8a230, \_block=..., \_bc=...) at /mnt/src/cpp-ethereum/libethereum/Block.cpp:464

#3 0x00007ffff78d6c45 in dev::eth::BlockChain::import (this=this@entry=0x6b80b0, \_block=..., \_db=..., \_mustBeNew=\_mustBeNew@entry=true)

at /mnt/src/cpp-ethereum/libethereum/BlockChain.cpp:728

#4 0x00007ffff78dc76e in dev::eth::BlockChain::sync (this=0x6b80b0, \_bq=..., \_stateDB=..., \_max=\_max@entry=50) at /mnt/src/cpp-ethereum/libethereum/BlockChain.cpp:432

#5 0x00007ffff795d4c5 in dev::eth::Client::syncBlockQueue (this=this@entry=0x6b7b20) at /mnt/src/cpp-ethereum/libethereum/Client.cpp:689

#6 0x00007ffff795f49f in dev::eth::Client::doWork (this=0x6b7b20, \_doWait=\_doWait@entry=true) at /mnt/src/cpp-ethereum/libethereum/Client.cpp:972

#7 0x00007ffff7b88be2 in dev::eth::Client::doWork (this=<optimized out>) at /mnt/src/cpp-ethereum/libethashseal/../libethereum/Client.h:295

#8 0x00007ffff72b222c in dev::Worker::workLoop (this=0x6b8048) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:120

#9 0x00007ffff72b2e6e in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x692e68) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:56

#10 0x00007ffff72b4149 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<> (this=<optimized out>) at /usr/include/c++/5/functional:1531

#11 std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator() (this=<optimized out>) at /usr/include/c++/5/functional:1520

#12 std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (this=<optimized out>) at /usr/include/c++/5/thread:115

#13 0x00007ffff64afc80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#14 0x00007ffff7bc16fa in start\_thread (arg=0x7fffeae8c700) at pthread\_create.c:333

#15 0x00007ffff5c15b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 创建新连接流程：

#0 dev::eth::EthereumPeer::EthereumPeer (this=0x7fffd801a5a0, \_s=..., \_h=<optimized out>, \_i=<optimized out>, \_cap=..., \_capID=<optimized out>)

at /mnt/src/cpp-ethereum/libethereum/EthereumPeer.cpp:61

#1 0x00007ffff7997742 in \_\_gnu\_cxx::new\_allocator<dev::eth::EthereumPeer>::construct<dev::eth::EthereumPeer, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(dev::eth::EthereumPeer\*, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (\_\_p=0x7fffd801a5a0, this=<optimized out>)

at /usr/include/c++/5/ext/new\_allocator.h:120

#2 std::allocator\_traits<std::allocator<dev::eth::EthereumPeer> >::construct<dev::eth::EthereumPeer, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::allocator<dev::eth::EthereumPeer>&, dev::eth::EthereumPeer\*, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (\_\_p=<optimized out>,

\_\_a=...) at /usr/include/c++/5/bits/alloc\_traits.h:530

#3 std::\_Sp\_counted\_ptr\_inplace<dev::eth::EthereumPeer, std::allocator<dev::eth::EthereumPeer>, (\_\_gnu\_cxx::\_Lock\_policy)2>::\_Sp\_counted\_ptr\_inplace<std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::allocator<dev::eth::EthereumPeer>, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (

\_\_a=..., this=0x7fffd801a590) at /usr/include/c++/5/bits/shared\_ptr\_base.h:522

#4 std::\_\_shared\_count<(\_\_gnu\_cxx::\_Lock\_policy)2>::\_\_shared\_count<dev::eth::EthereumPeer, std::allocator<dev::eth::EthereumPeer>, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::\_Sp\_make\_shared\_tag, dev::eth::EthereumPeer\*, std::allocator<dev::eth::EthereumPeer> const&, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_inte

ger\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (\_\_a=..., this=0x7fffe9e7d898) at /usr/include/c++/5/bits/shared\_ptr\_base.h:617

#5 std::\_\_shared\_ptr<dev::eth::EthereumPeer, (\_\_gnu\_cxx::\_Lock\_policy)2>::\_\_shared\_ptr<std::allocator<dev::eth::EthereumPeer>, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::\_Sp\_make\_shared\_tag, std::allocator<dev::eth::EthereumPeer> const&, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (\_\_a=..., \_\_tag=..., this=0x7fffe9e7d890) at /usr/include/c++/5/bits/shared\_ptr\_base.h:1097

#6 std::shared\_ptr<dev::eth::EthereumPeer>::shared\_ptr<std::allocator<dev::eth::EthereumPeer>, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::\_Sp\_make\_shared\_tag, std::allocator<dev::eth::EthereumPeer> const&, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (\_\_a=..., \_\_tag=...,

---Type <return> to continue, or q <return> to quit---

this=0x7fffe9e7d890) at /usr/include/c++/5/bits/shared\_ptr.h:319

#7 std::allocate\_shared<dev::eth::EthereumPeer, std::allocator<dev::eth::EthereumPeer>, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::allocator<dev::eth::EthereumPeer> const&, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) (\_\_a=...) at /usr/include/c++/5/bits/shared\_ptr.h:620

#8 std::make\_shared<dev::eth::EthereumPeer, std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&>(std::shared\_ptr<dev::p2p::Session> const&, dev::p2p::HostCapability<dev::eth::EthereumPeer>\*&&, unsigned int&, std::pair<std::\_\_cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0> > const&, unsigned short&) () at /usr/include/c++/5/bits/shared\_ptr.h:636

#9 dev::p2p::HostCapability<dev::eth::EthereumPeer>::newPeerCapability (this=0x698ac0, \_s=std::shared\_ptr (count 2, weak 2) 0x7fffd8019450, \_idOffset=16, \_cap=..., \_capID=<optimized out>)

at /mnt/src/cpp-ethereum/libethereum/../libp2p/HostCapability.h:86

#10 0x00007ffff74b5b47 in dev::p2p::Host::startPeerSession(dev::FixedHash<64u> const&, dev::RLP const&, std::unique\_ptr<dev::p2p::RLPXFrameCoder, std::default\_delete<dev::p2p::RLPXFrameCoder> >&&, std::shared\_ptr<dev::p2p::RLPXSocket> const&) (this=0x7fffffffdd08, \_id=..., \_rlp=..., \_io=<optimized out>, \_s=...) at /mnt/src/cpp-ethereum/libp2p/Host.cpp:364

#11 0x00007ffff7505815 in dev::p2p::RLPXHandshake::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)>::operator()(boost::system::error\_code, std::size\_t) const (\_\_closure=\_\_closure@entry=0x7fffe9e7f4d8, ec=...) at /mnt/src/cpp-ethereum/libp2p/RLPxHandshake.cpp:477

#12 0x00007ffff7505eb0 in boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >::operator()(const boost::system::error\_code &, std::size\_t, int) (this=this@entry=0x7fffe9e7f4b0, ec=..., bytes\_transferred=<optimized out>, start=start@entry=0)

at /usr/include/boost/asio/impl/read.hpp:282

#13 0x00007ffff7507481 in boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>::operator() (this=0x7fffe9e7f4b0)

at /usr/include/boost/asio/detail/bind\_handler.hpp:127

#14 boost::asio::asio\_handler\_invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int> > (function=...) at /usr/include/boost/asio/handler\_invoke\_hook.hpp:69

#15 boost\_asio\_handler\_invoke\_helpers::invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > (context=..., function=...) at /usr/include/boost/asio/detail/handler\_invoke\_helpers.hpp:37

#16 boost::asio::detail::asio\_handler\_invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > (

this\_handler=<optimized out>, function=...) at /usr/include/boost/asio/impl/read.hpp:502

#17 boost\_asio\_handler\_invoke\_helpers::invoke<boost::asio::detail::binder2<boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> >, boost::system::error\_code, long unsigned int>, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp>, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t---Type <return> to continue, or q <return> to quit---

)> > > (context=..., function=...) at /usr/include/boost/asio/detail/handler\_invoke\_helpers.hpp:37

#18 boost::asio::detail::reactive\_socket\_recv\_op<boost::asio::mutable\_buffers\_1, boost::asio::detail::read\_op<boost::asio::basic\_stream\_socket<boost::asio::ip::tcp, boost::asio::stream\_socket\_service<boost::asio::ip::tcp> >, boost::asio::mutable\_buffers\_1, boost::asio::detail::transfer\_all\_t, dev::p2p::RLPXHandshake::transition(boost::system::error\_code)::<lambda(boost::system::error\_code, std::size\_t)>::<lambda(boost::system::error\_code, std::size\_t)> > >::do\_complete(boost::asio::detail::io\_service\_impl \*, boost::asio::detail::operation \*, const boost::system::error\_code &, std::size\_t) (owner=0x584cd0, base=<optimized out>) at /usr/include/boost/asio/detail/reactive\_socket\_recv\_op.hpp:110

#19 0x00007ffff74bb94a in boost::asio::detail::task\_io\_service\_operation::complete (bytes\_transferred=0, ec=..., owner=..., this=0x7fffd8017fc0)

at /usr/include/boost/asio/detail/task\_io\_service\_operation.hpp:38

#20 boost::asio::detail::task\_io\_service::do\_run\_one (ec=..., this\_thread=..., lock=..., this=<optimized out>) at /usr/include/boost/asio/detail/impl/task\_io\_service.ipp:372

#21 boost::asio::detail::task\_io\_service::run (this=0x584cd0, ec=...) at /usr/include/boost/asio/detail/impl/task\_io\_service.ipp:149

#22 0x00007ffff74a0cd5 in boost::asio::io\_service::run (this=0x7fffffffde58) at /usr/include/boost/asio/impl/io\_service.ipp:59

#23 dev::p2p::Host::doWork (this=0x7fffffffdd08) at /mnt/src/cpp-ethereum/libp2p/Host.cpp:796

#24 0x00007ffff72b422c in dev::Worker::workLoop (this=0x7fffffffdd08) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:120

#25 0x00007ffff72b4e6e in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x694678) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:56

#26 0x00007ffff72b6149 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<> (this=<optimized out>) at /usr/include/c++/5/functional:1531

#27 std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator() (this=<optimized out>) at /usr/include/c++/5/functional:1520

#28 std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (this=<optimized out>) at /usr/include/c++/5/thread:115

#29 0x00007ffff64b1c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#30 0x00007ffff7bc16fa in start\_thread (arg=0x7fffe9e80700) at pthread\_create.c:333

#31 0x00007ffff5c17b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 创建默克尔树流程：

#0 dev::SpecificTrieDB<dev::GenericTrieDB<dev::OverlayDB>, dev::FixedHash<32u> >::insert (\_value=..., \_k=..., this=0x6bc930)

at /mnt/src/cpp-ethereum/libethereum/../libdevcore/TrieDB.h:333

#1 dev::FatGenericTrieDB<dev::OverlayDB>::insert (\_value=..., \_key=..., this=0x6bc930) at /mnt/src/cpp-ethereum/libethereum/../libdevcore/TrieDB.h:449

#2 dev::SpecificTrieDB<dev::FatGenericTrieDB<dev::OverlayDB>, dev::FixedHash<20u> >::insert (\_value=..., \_k=..., this=0x6bc930)

at /mnt/src/cpp-ethereum/libethereum/../libdevcore/TrieDB.h:333

#3 dev::eth::commit<dev::OverlayDB> (\_cache=..., \_state=...) at /mnt/src/cpp-ethereum/libethereum/State.h:352

#4 0x00007ffff79d8523 in dev::eth::State::commit (this=this@entry=0x6bc890, \_commitBehaviour=<optimized out>) at /mnt/src/cpp-ethereum/libethereum/State.cpp:239

#5 0x00007ffff79d8e7d in dev::eth::State::execute(dev::eth::EnvInfo const&, dev::eth::SealEngineFace const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=this@entry=0x6bc890,

\_envInfo=..., \_sealEngine=..., \_t=..., \_p=\_p@entry=dev::eth::Permanence::Committed, \_onOp=...) at /mnt/src/cpp-ethereum/libethereum/State.cpp:667

#6 0x00007ffff789e20a in dev::eth::Block::execute(std::vector<dev::FixedHash<32u>, std::allocator<dev::FixedHash<32u> > > const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (

this=this@entry=0x6bc880, \_lh=std::vector of length 256, capacity 256 = {...}, \_t=..., \_p=\_p@entry=dev::eth::Permanence::Committed, \_onOp=...)

at /mnt/src/cpp-ethereum/libethereum/Block.cpp:691

#7 0x00007ffff78a020f in dev::eth::Block::sync (this=this@entry=0x6bc880, \_bc=..., \_tq=..., \_gp=..., msTimeout=msTimeout@entry=100) at /mnt/src/cpp-ethereum/libethereum/Block.cpp:346

#8 0x00007ffff7954146 in dev::eth::Client::syncTransactionQueue (this=this@entry=0x6b8f30) at /mnt/src/cpp-ethereum/libethereum/Client.cpp:724

#9 0x00007ffff795fe7f in dev::eth::Client::doWork (this=0x6b8f30, \_doWait=\_doWait@entry=true) at /mnt/src/cpp-ethereum/libethereum/Client.cpp:990

#10 0x00007ffff7b88be2 in dev::eth::Client::doWork (this=<optimized out>) at /mnt/src/cpp-ethereum/libethashseal/../libethereum/Client.h:298

#11 0x00007ffff72d422c in dev::Worker::workLoop (this=0x6b9458) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:120

#12 0x00007ffff72d4e6e in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x68a0f8) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:56

#13 0x00007ffff72d6149 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<> (this=<optimized out>) at /usr/include/c++/5/functional:1531

#14 std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator() (this=<optimized out>) at /usr/include/c++/5/functional:1520

#15 std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (this=<optimized out>) at /usr/include/c++/5/thread:115

#16 0x00007ffff64d1c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#17 0x00007ffff7bc16fa in start\_thread (arg=0x7fffeae38700) at pthread\_create.c:333

#18 0x00007ffff5c37b5d in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 创建合约账号流程：

#0 dev::eth::Account::Account (this=0x7fffe40a45c0, \_nonce=..., \_balance=..., \_contractRoot=..., \_codeHash=..., \_c=dev::eth::Account::Unchanged)

at /mnt/src/weizhong-cpp-ethereum/libethereum/Account.h:88

#1 0x0000000001233b40 in std::pair<dev::FixedHash<20u> const, dev::eth::Account>::pair<dev::FixedHash<20u> const&, 0ul, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&, 0ul, 1ul, 2ul, 3ul, 4ul>(std::tuple<dev::FixedHash<20u> const&>&, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&, std::\_Index\_tuple<0ul>, std::\_Index\_tuple<0ul, 1ul, 2ul, 3ul, 4ul>) (this=0x7fffe40a45a0, \_\_tuple1=std::tuple containing = {...}, \_\_tuple2=std::tuple containing = {...})

at /usr/include/c++/5/tuple:1172

#2 0x00000000012333c9 in std::pair<dev::FixedHash<20u> const, dev::eth::Account>::pair<dev::FixedHash<20u> const&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>(std::piecewise\_construct\_t, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>) (this=0x7fffe40a45a0, \_\_first=std::tuple containing = {...}, \_\_second=std::tuple containing = {...}) at /usr/include/c++/5/tuple:1161

#3 0x000000000123288e in \_\_gnu\_cxx::new\_allocator<std::pair<dev::FixedHash<20u> const, dev::eth::Account> >::construct<std::pair<dev::FixedHash<20u> const, dev::eth::Account>, std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&> >(std::pair<dev::FixedHash<20u> const, dev::eth::Account>\*, std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>&&, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&&) (this=0x7fffed03db6f, \_\_p=0x7fffe40a45a0) at /usr/include/c++/5/ext/new\_allocator.h:120

#4 0x0000000001231974 in std::allocator\_traits<std::allocator<std::pair<dev::FixedHash<20u> const, dev::eth::Account> > >::construct<std::pair<dev::FixedHash<20u> const, dev::eth::Account>, std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&> >(std::allocator<std::pair<dev::FixedHash<20u> const, dev::eth::Account> >&, std::pair<dev::FixedHash<20u> const, dev::eth::Account>\*, std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>&&, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&&) (\_\_a=..., \_\_p=0x7fffe40a45a0)

at /usr/include/c++/5/bits/alloc\_traits.h:530

#5 0x000000000122f457 in std::\_\_detail::\_Hashtable\_alloc<std::allocator<std::\_\_detail::\_Hash\_node<std::pair<dev::FixedHash<20u> const, dev::eth::Account>, true> > >::\_M\_allocate\_node<std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&> >(std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>&&, std::tuple<boost::multipre---Type <return> to continue, or q <return> to quit---

cision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&&) (

this=0x1a97318) at /usr/include/c++/5/bits/hashtable\_policy.h:1955

#6 0x000000000122bc44 in std::\_Hashtable<dev::FixedHash<20u>, std::pair<dev::FixedHash<20u> const, dev::eth::Account>, std::allocator<std::pair<dev::FixedHash<20u> const, dev::eth::Account> >, std::\_\_detail::\_Select1st, std::equal\_to<dev::FixedHash<20u> >, std::hash<dev::FixedHash<20u> >, std::\_\_detail::\_Mod\_range\_hashing, std::\_\_detail::\_Default\_ranged\_hash, std::\_\_detail::\_Prime\_rehash\_policy, std::\_\_detail::\_Hashtable\_traits<true, false, true> >::\_M\_emplace<std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&> >(std::integral\_constant<bool, true>, std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>&&, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&&) (this=0x1a97318) at /usr/include/c++/5/bits/hashtable.h:1526

#7 0x0000000001228082 in std::\_Hashtable<dev::FixedHash<20u>, std::pair<dev::FixedHash<20u> const, dev::eth::Account>, std::allocator<std::pair<dev::FixedHash<20u> const, dev::eth::Account> >, std::\_\_detail::\_Select1st, std::equal\_to<dev::FixedHash<20u> >, std::hash<dev::FixedHash<20u> >, std::\_\_detail::\_Mod\_range\_hashing, std::\_\_detail::\_Default\_ranged\_hash, std::\_\_detail::\_Prime\_rehash\_policy, std::\_\_detail::\_Hashtable\_traits<true, false, true> >::emplace<std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&> >(std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>&&, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&&) (this=0x1a97318) at /usr/include/c++/5/bits/hashtable.h:726

#8 0x000000000122523c in std::unordered\_map<dev::FixedHash<20u>, dev::eth::Account, std::hash<dev::FixedHash<20u> >, std::equal\_to<dev::FixedHash<20u> >, std::allocator<std::pair<dev::FixedHash<20u> const, dev::eth::Account> > >::emplace<std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&> >(std::piecewise\_construct\_t const&, std::tuple<dev::FixedHash<20u> const&>&&, std::tuple<boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<256u, 256u, (boost::multiprecision::cpp\_integer\_type)0, (boost::multiprecision::cpp\_int\_check\_type)0, void>, (boost::multiprecision::expression\_template\_option)0>&&, dev::FixedHash<32u>&&, dev::FixedHash<32u>&&, dev::eth::Account::Changedness&&>&&) (this=0x1a97318) at /usr/include/c++/5/bits/unordered\_map.h:380

#9 0x000000000121f383 in dev::eth::State::account (this=0x1a97250, \_addr=...) at /mnt/src/weizhong-cpp-ethereum/libethereum/State.cpp:205

#10 0x000000000121f095 in dev::eth::State::account (this=0x1a97250, \_a=...) at /mnt/src/weizhong-cpp-ethereum/libethereum/State.cpp:178

#11 0x00000000012201d3 in dev::eth::State::getNonce (this=0x1a97250, \_addr=...) at /mnt/src/weizhong-cpp-ethereum/libethereum/State.cpp:375

#12 0x00000000011eeca4 in dev::eth::Executive::create (this=0x7fffed03e660, \_sender=..., \_endowment=..., \_gasPrice=..., \_gas=..., \_init=..., \_origin=...)

at /mnt/src/weizhong-cpp-ethereum/libethereum/Executive.cpp:277

#13 0x00000000011ee2df in dev::eth::Executive::execute (this=0x7fffed03e660) at /mnt/src/weizhong-cpp-ethereum/libethereum/Executive.cpp:215

#14 0x0000000001221247 in dev::eth::State::execute(dev::eth::EnvInfo const&, dev::eth::SealEngineFace const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_t---Type <return> to continue, or q <return> to quit---

emplate\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&) (this=0x1a97250, \_envInfo=...,

\_sealEngine=..., \_t=..., \_p=dev::eth::Permanence::Committed, \_onOp=...) at /mnt/src/weizhong-cpp-ethereum/libethereum/State.cpp:572

#15 0x00000000010daf5b in dev::eth::Block::execute(std::vector<dev::FixedHash<32u>, std::allocator<dev::FixedHash<32u> > > const&, dev::eth::Transaction const&, dev::eth::Permanence, std::function<void (unsigned long, unsigned long, dev::eth::Instruction, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, boost::multiprecision::number<boost::multiprecision::backends::cpp\_int\_backend<0u, 0u, (boost::multiprecision::cpp\_integer\_type)1, (boost::multiprecision::cpp\_int\_check\_type)0, std::allocator<unsigned long long> >, (boost::multiprecision::expression\_template\_option)1>, dev::eth::VM\*, dev::eth::ExtVMFace const\*)> const&, dev::eth::BlockChain const\*) (this=0x1a97250, \_lh=std::vector of length 256, capacity 256 = {...}, \_t=..., \_p=dev::eth::Permanence::Committed, \_onOp=..., \_bcp=0x1a93910)

at /mnt/src/weizhong-cpp-ethereum/libethereum/Block.cpp:822

#16 0x00000000010d6616 in dev::eth::Block::sync (this=0x1a97250, \_bc=..., \_tq=..., \_gp=..., msTimeout=100) at /mnt/src/weizhong-cpp-ethereum/libethereum/Block.cpp:388

#17 0x00000000011a37f1 in dev::eth::Client::syncTransactionQueue (this=0x1a933a0) at /mnt/src/weizhong-cpp-ethereum/libethereum/Client.cpp:558

#18 0x00000000011a60db in dev::eth::Client::doWork (this=0x1a933a0, \_doWait=true) at /mnt/src/weizhong-cpp-ethereum/libethereum/Client.cpp:816

#19 0x0000000001083056 in dev::eth::Client::doWork (this=0x1a933a0) at /mnt/src/weizhong-cpp-ethereum/libsinglepoint/../libethereum/Client.h:261

#20 0x00000000014ede3b in dev::Worker::workLoop (this=0x1a938a8) at /mnt/src/weizhong-cpp-ethereum/libdevcore/Worker.cpp:125

#21 0x00000000014ed409 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0x1abcc68) at /mnt/src/weizhong-cpp-ethereum/libdevcore/Worker.cpp:61

#22 0x00000000014ef16c in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (this=0x1abcc68) at /usr/include/c++/5/functional:1531

#23 0x00000000014ef0d5 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0x1abcc68) at /usr/include/c++/5/functional:1520

#24 0x00000000014ef074 in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (this=0x1abcc50) at /usr/include/c++/5/thread:115

#25 0x00007ffff6ac3c80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#26 0x00007ffff7bc16ba in start\_thread (arg=0x7fffed040700) at pthread\_create.c:333

#27 0x00007ffff62293dd in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 挖矿奖励流程：

#0 dev::eth::Block::applyRewards (this=0x1dd2da0, \_uncleBlockHeaders=std::vector of length 0, capacity 0, \_blockReward=...) at /mnt/src/cpp-ethereum/libethereum/Block.cpp:685

#1 0x000000000057023a in dev::eth::Block::commitToSeal (this=0x1dd2da0, \_bc=..., \_extraData=std::vector of length 29, capacity 29 = {...})

at /mnt/src/cpp-ethereum/libethereum/Block.cpp:799

#2 0x0000000000620992 in dev::eth::Client::rejigSealing (this=0x1dcf310) at /mnt/src/cpp-ethereum/libethereum/Client.cpp:600

#3 0x000000000062155b in dev::eth::Client::doWork (this=0x1dcf310, \_doWait=true) at /mnt/src/cpp-ethereum/libethereum/Client.cpp:675

#4 0x000000000055bb65 in dev::eth::Client::doWork (this=0x1dcf310) at /mnt/src/cpp-ethereum/libethashseal/../libethereum/Client.h:231

#5 0x000000000086fc7d in dev::Worker::workLoop (this=0x1dcf808) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:131

#6 0x000000000086f194 in dev::Worker::<lambda()>::operator()(void) const (\_\_closure=0xf0f838) at /mnt/src/cpp-ethereum/libdevcore/Worker.cpp:59

#7 0x0000000000870c5c in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::\_M\_invoke<>(std::\_Index\_tuple<>) (this=0xf0f838) at /usr/include/c++/5/functional:1531

#8 0x0000000000870bc5 in std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()>::operator()(void) (this=0xf0f838) at /usr/include/c++/5/functional:1520

#9 0x0000000000870b64 in std::thread::\_Impl<std::\_Bind\_simple<dev::Worker::startWorking()::<lambda()>()> >::\_M\_run(void) (this=0xf0f820) at /usr/include/c++/5/thread:115

#10 0x00007ffff747ec80 in ?? () from /usr/lib/x86\_64-linux-gnu/libstdc++.so.6

#11 0x00007ffff7bc16ba in start\_thread (arg=0x7ffff31ea700) at pthread\_create.c:333

#12 0x00007ffff6be43dd in clone () at ../sysdeps/unix/sysv/linux/x86\_64/clone.S:109

### 交易gas计算：

收到的交易可能有gas 和 gasPrice 属性。

如果没有，则是以默认的gas 和 gasPrice，默认的 gas=min<u256>(gasLimitRemaining() / 5, ts.gasPrice > DefaultGasPrice ? (balanceAt(ts.from) / ts.gasPrice) : (balanceAt(ts.from) / DefaultGasPrice)); gasPrice=20000000000。默认的gas 可以由启动参数--bid设置，默认的gasPrice可以由启动参数--ask设置。

# 问题列表：

1： 产生未来的时间是的区块。

2： 产生区块的频率，只在有交易的时候才产生区块，可以设置产生区块的超时时间和交易数额限制。

3： gas不足的时候放到队列里面，下一个区块再挖矿，而不是返回错误。