



# ethereum

## vienna

10<sup>th</sup> Meetup  
Frontier



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# Agenda

Introduction

Guide to the Frontier

The state of Frontier





# ethereum vienna

Guide to the Frontier



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Geth

**Windows** (see [ethereum.org](https://ethereum.org))

install chocolatey

```
C:\> @powershell -NoProfile -ExecutionPolicy Bypass -Command "iex ((new-object net.webclient).DownloadString('https://chocolatey.org/install.ps1'))" && SET PATH=%PATH%;%ALLUSERSPROFILE%\chocolatey\bin
```

choco install geth-stable -version 1.0.0.0

**Mac / Linux**

bash <(curl https://install-geth.ethereum.org -L)



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Geth

Build from **source**

install dependencies (gmp, go)

```
git clone git://github.com/ethereum/go-ethereum
```

```
cd go-ethereum
```

```
git checkout master
```

```
make geth
```





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Geth

Start the client (geth)

geth will start syncing the blockchain

```
chain_manager.go:662] imported 256 block(s) (0 queued 0 ignored) including 83 txs in 376.471899ms. #55693 [7b7ff6ae / 6495c1ce]
```

Open a interactive js console with “geth attach”

**admin:** node administration

**miner:** starting / stopping miner, gasprice, coinbase

**net:** information about the network (peer count)

**personal:** creating / listing / unlocking accounts

**txpool:** number of pending transactions

**eth:** interaction with the blockchain

**shh:** interaction with whisper (requires geth —shh)

**web3:** conversion utilities, contains every other object



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Geth

Get latest block timestamp

```
eth.getBlock(eth.blockNumber).timestamp
```

Convert to time

```
new Date(eth.getBlock(eth.blockNumber).timestamp  
*1000).ToString()
```



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Geth

Import presale wallets

```
geth wallet import keyfile.json  
enter password used at resale
```





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Geth

Listing accounts

`eth.accounts`: array of accounts

Check balance

`eth.getBalance(addressGoesHere)`

Output is in wei. Convert using web3

`web3.fromWei(weiBalance, "ether")`



# ethereum

# Explorers

[etherchain.org](https://etherchain.org)

etherchain.org

Home

Blocks

Transactions

Accounts

Contracts

Statistics ▾

Tools ▾

Tx Hash, Address or Block

Search

Ethereum Frontier Network Stats

Uncle Rate

0.11

Tx per hour

53

Difficulty

1.712 T

Block Time

13.4s

Hash Rate

127.521 GH/s

Gas Limit

3.141 M

Recent blocks

Block	Miner	Age	Hash
<a href="#">59647</a>	<a href="#">0x9746c7e1...</a>	a few seconds ago	<a href="#">0xa8316cb7...</a>
<a href="#">59646</a>	<a href="#">0xbf43cdd2...</a>	a few seconds ago	<a href="#">0xca37caef...</a>
<a href="#">59645</a>	<a href="#">0x88d74a59...</a>	a few seconds ago	<a href="#">0xa27a7058...</a>
<a href="#">59644</a>	<a href="#">0xef247e63...</a>	a few seconds ago	<a href="#">0x42073de6...</a>
<a href="#">59643</a>	<a href="#">0x9746c7e1...</a>	a few seconds ago	<a href="#">0xd00315df...</a>

Recent transactions

Block	From	To	Amount	Age
<a href="#">59640</a>	<a href="#">0xd0a2d2ea...</a>	<a href="#">0x0f03c404...</a>	1.01 Ether	a minute ago
<a href="#">59638</a>	<a href="#">0x88a0a054...</a>	<a href="#">0xc185eb46...</a>	1,978 Ether	a minute ago
<a href="#">59625</a>	<a href="#">0x073f70b5...</a>	<a href="#">0x9ed1a2bc...</a>	0 Wei	5 minutes ago
<a href="#">59616</a>	<a href="#">0x98077f47...</a>	<a href="#">0x32be343b...</a>	1,799.99876471 Ether	7 minutes ago
<a href="#">59610</a>	<a href="#">0x60d56671...</a>	<a href="#">0x2910543a...</a>	10,000 Ether	9 minutes ago





# ethereum

# Explorers

[etherapps.info](https://etherapps.info)



 home

 mining statistics

address, contract or transaction hash

Search!

## Recent Blocks

Block	Age	Transactions	Total Sent	Mined By
<a href="#">#59640</a>	12 seconds ago	<a href="#">1</a>	1.01 ether	<a href="#">0xb7268c7705a1866b2a78e882fdcdc8e2a4e1428e</a>
<a href="#">#59639</a>	34 seconds ago	0	0 ether	<a href="#">0x70c6b45fe0a5116e97b112b806a76e2f51e24413</a>
<a href="#">#59638</a>	19 seconds ago	<a href="#">1</a>	1,978 ether	<a href="#">0x39a1bb80a741bf5ec39fb9be59408fa0f418ffbf</a>
<a href="#">#59637</a>	23 seconds ago	0	0 ether	<a href="#">0xf2d2aff1320476cb8c6b607199d23175cc595693</a>
<a href="#">#59636</a>	27 seconds ago	0	0 ether	<a href="#">0xa50ec0d39fa913e62f1bae7074e6f36caa71855b</a>
<a href="#">#59635</a>	30 seconds ago	0	0 ether	<a href="#">0x9746c7e1ef2bd21ff3997fa467593a89cb852bd0</a>
<a href="#">#59634</a>	1 minute ago	0	0 ether	<a href="#">0xeb1325c8d9d3ea8d74ac11f4b00f1b2367686319</a>
<a href="#">#59633</a>	1 minute ago	0	0 ether	<a href="#">0xbb7b8287f3f0a933474a79eae42cbca977791171</a>





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# Explorers

EtherCamp (has VM-Trace)

Get Address

Transactions

Sign In Sign Up

VM-Trace

Operations [42 steps]

PUSH1

PUSH1

MSTORE

CALLDATASIZE

ISZERO

PUSH2

JUMPI

JUMPDEST

PUSH2

PUSH1

SLOAD

PUSH1

DEEP 0

PC 130

GAS 178964

Memory [96 bytes]

00000000	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000010	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000020	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000030	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000040	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....
00000050	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....

Stack [0 values]

ask us anything



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Geth

Creating accounts

```
geth account new
```

Unlocking accounts

```
personal.unlockAccount(address, password)
```

better:

```
geth --unlock account
```



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Geth

Sending a simple transaction

```
eth.sendTransaction({  
  from: account1,  
  to: account2,  
  value: web3.toWei(2,"ether")  
})
```

Returns transaction hash





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Geth

## Checking transactions

`eth.getTransactionReceipt(txHash)`

```
{  
  blockHash: '0xf9832911bd6e95dcefea99e3d4bc160ba631dfbf7cdb5c3bc6cc6cbe34a19e52',  
  blockNumber: 623,  
  contractAddress: '0x49082df6cedfdf531a39670bd71ef2aeb872a903',  
  cumulativeGasUsed: 21000,  
  gasUsed: 21000,  
  logs: [ ],  
  transactionHash: '0x7f5baa91e17cafc3bb08859c3b0257da967bbeb59d85158441b205085e0cd305',  
  transactionIndex: 0  
}
```

If included in a block, return object contains a blockHash

`eth.getTransaction(txHash)`

returns from, to, value, etc.



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Geth

## Contract Interaction

```
var proto = eth.contract(json_abi)
```

```
var proxy = proto.at(address)
```

```
proxy.method(args, txobject, callback)
```



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# Contract

TimeLock Contract (230k gas)

lock(id,n): (82k gas)

Lock funds for n blocks

unlock(id): (22k/19k gas)

Return funds

```
contract TimeLock {  
  
    struct Deposit {  
        address sender;  
        uint256 value;  
        uint256 block;  
    }  
  
    mapping (uint256 => Deposit) public deposits;  
  
    function lock(uint256 id, uint256 blocks) {  
        var deposit = deposits[id];  
  
        if(deposit.sender != 0) {  
            msg.sender.send(msg.value);  
            return;  
        }  
  
        deposit.sender = msg.sender;  
        deposit.value = msg.value;  
        deposit.block = block.number + blocks;  
    }  
  
    function unlock(uint256 id) {  
        var deposit = deposits[id];  
  
        if(deposit.sender != msg.sender) return;  
        if(deposit.block > block.number) return;  
  
        deposit.sender.send(deposit.value);  
        deposit.sender = 0;  
    }  
}
```





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Buy / Sell

High confirmation requirements (25h - 90m)

Kraken

same address for all depositors

account id supplied by data

Poloniex

Bitmex (for hedging, speculation only)



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Buy / Sell

Coinimal

Instant deposit methods for euro

EPS

Sofort

EtherEx not ready yet

Bitstamp is considering, but probably not anytime soon



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Price

Presale 0.00050 - 0.00074 btc / eth ~ 0.22 - 0.33 eur

August 13th: 0.00463 btc / eth (10.7x - 6.2x)

August 13th: 1.24 eur / eth (5.6x - 3.75x)

After thawing high of 0.012 btw

Next day crash low of 0.002 btc ~ 0.52 euro

Probably already outdated



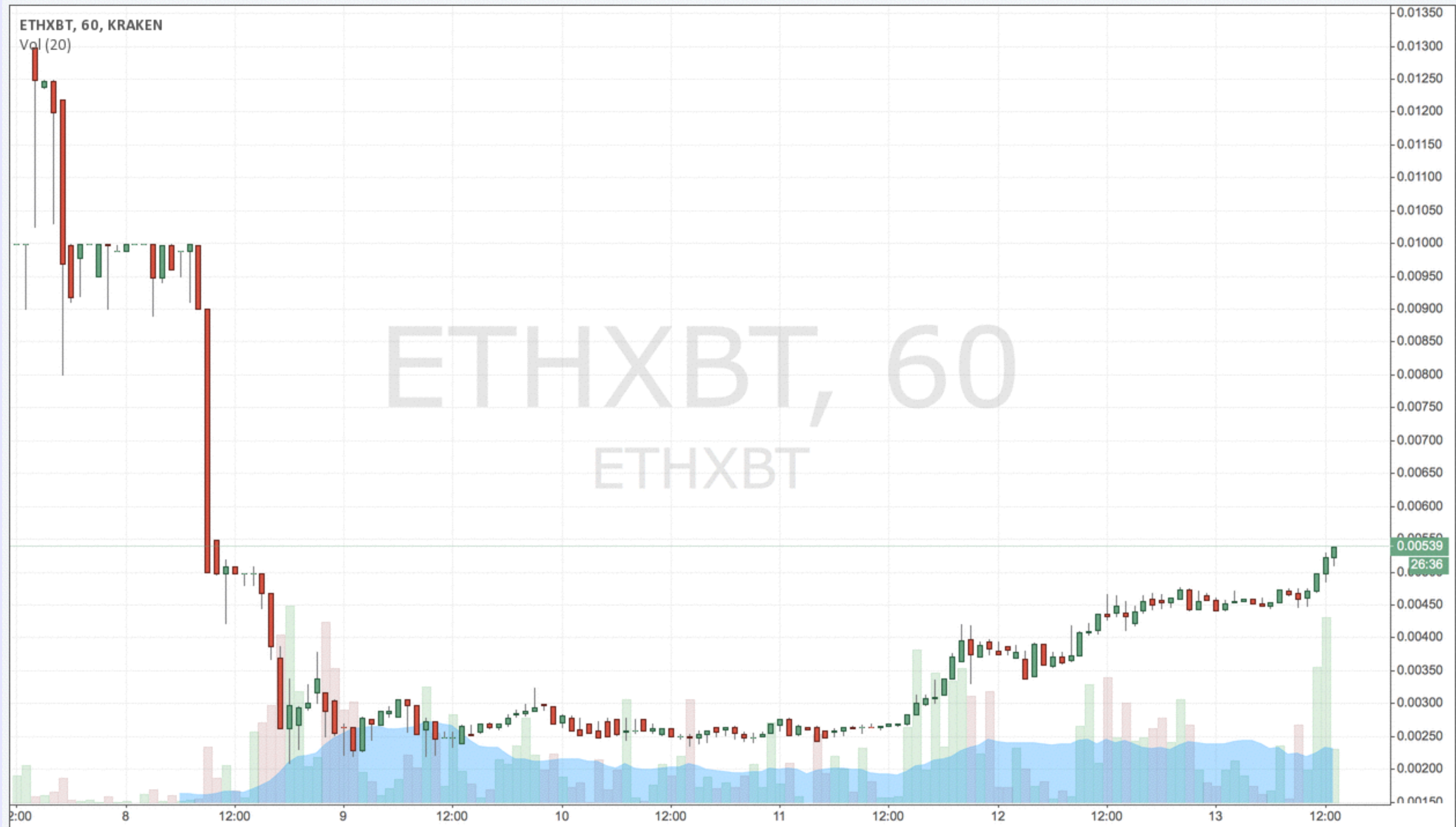


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## Price

Published on TradingView.com, August 13, 2015 08:33 EST

**KRAKEN:ETHXBT** 0.00539 ▲ +0.00080 (+17.43%) O:0.00523 H:0.00539 L:0.00510 C:0.00539





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# Mining

CPU mining with geth (ineffective, for testing)

ethminer (in cpp-ethereum, connects to geth by RPC)

“ethminer -G” forces gpu mining

geth must run with “--rpc”





# ethereum

## vienna

The state of Frontier



# ethereum Transactions

Not many contracts deployed yet

Mainly pyramid schemes and jokes

Most transactions go to and from exchanges





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TPS

Very low. Only ~2k transactions per day (~0.02TPS)

Transactions possible since August 6th

Theoretical limit for simple transactions (21000 gas):

Gaslimit 3,141,592M (=PI\*1M)

149 Tx per block = 9.93 TPS



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# Gasprice

Default value ~ 55840188977 wei

Standard transaction: ~0.0011 eth

Small Contract: ~0.0083 eth

Large Contract: ~0.1116 eth



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Uncle rate

~400 uncles per day

0.06 uncles per block

Increases inflation by ~5% (max 181%)



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Hashrate

**Warning:** Probably completely inaccurate!

160 GH/s

290x ~ 27 MH/s ~ 300W ~ 360€

~5900 GPUs ~ 2.1M€

Cost per hour: 0.021€ assuming 7c electricity

Ether per hour: 1280eth ~ 0.21 eth/h ~ 0.26€

Profit / month at static hashrate: 172€

Maximal profitable hashrate ~ 2160 GHs





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# Miners

from etherapps.info

## Mining Statistics

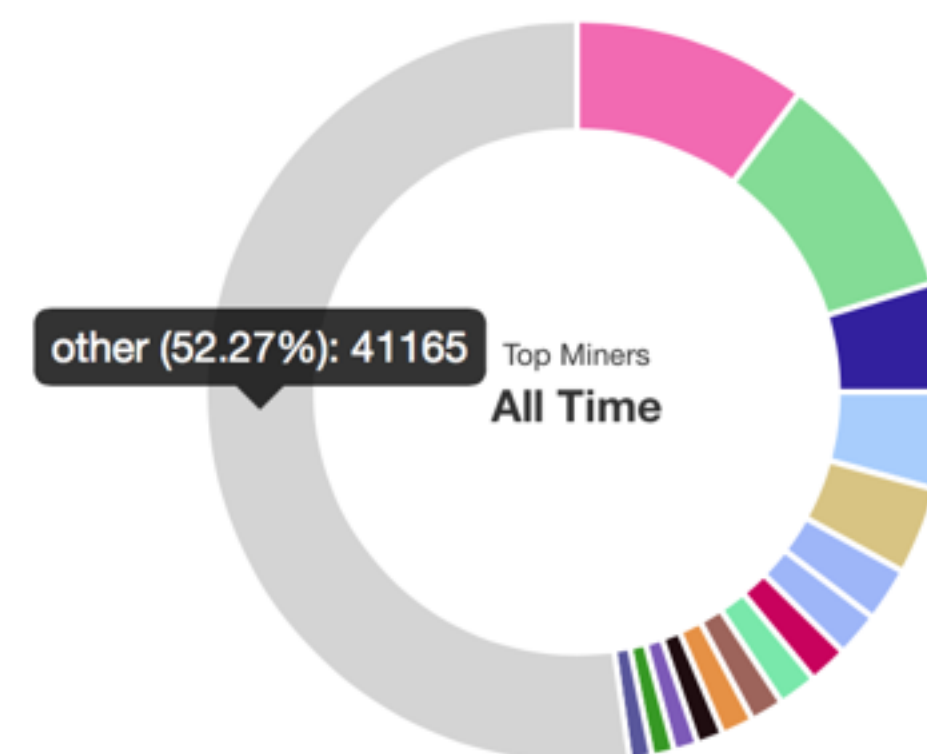
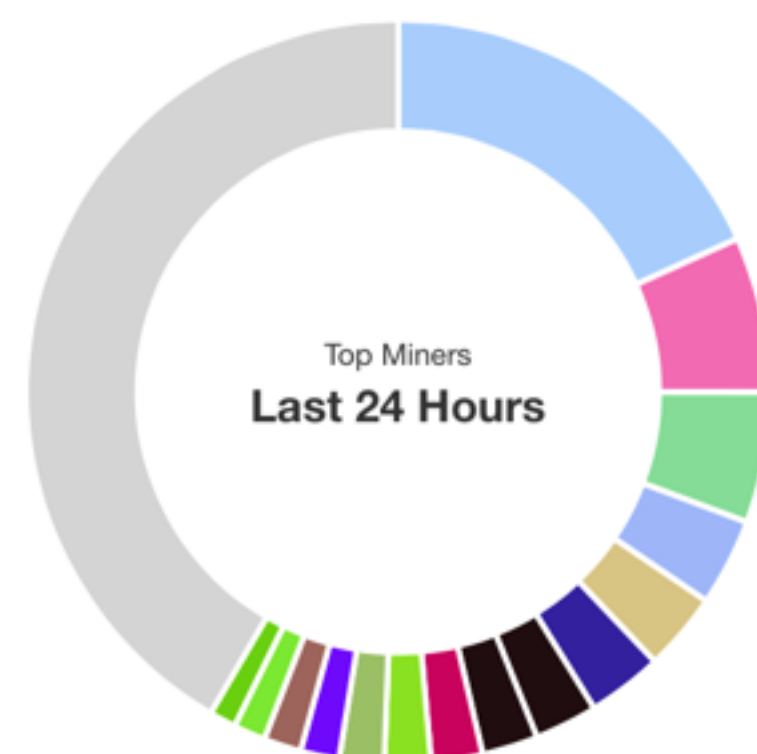
### Current Statistics

Blockchain Height	78,754
Average Block Time	16.34 seconds
Difficulty	2,308,854,225,953
Gas Limit	3,141,592
Network Hashrate	136.50 GH/s

### Difficulty Change

1 Hour	+0.58%
24 Hours	+4.42%
7 Days	+70.28%

## Top Miners



Presentations

<https://github.com/dafcok/ethereum>