Execution Layer Configuration Options (op-geth)

You can configure your node using the command line options below (also called flags). There are also sub-commands, which can be used to invoke functionality such as the console or blockchain import/export. This page list all configuration options forop-geth .op-geth implements the Execution-Layer, with minimal changes for a secure Ethereum-equivalent application environment. The following are options from v1.101308.0 (opens in a new tab)

Please note that the executable is still namedgeth to maintain aninimal diff(opens in a new tab).

Global Options

Account

allow-insecure-unlock

Allows insecure account unlocking when account-related RPCs are exposed by HTTP. The default value isfalse .

Syntax Example Environment Variable -- allow-insecure-unlock

keystore

Directory for the keystore. The default is inside the data directory.

Syntax Example Environment Variable --keystore

lightkdf

Reduce key-derivation RAM & CPU usage at some expense of KDF strength. The default value isfalse .

Syntax Example Environment Variable -- lightkdf

password

Password file to use for non-interactive password input.

Syntax Example Environment Variable --password

pcscdpath

Path to the smartcard daemon (pcscd) socket file. The default value is"/run/pcscd/pcscd.comm" .

Syntax Example Environment Variable --pcscdpath

signer

External signer (url or path to ipc file).

Syntax Example Environment Variable --signer

unlock

Comma separated list of accounts to unlock.

Syntax Example Environment Variable --unlock

usb

Enable monitoring and management of USB hardware wallets. The default value isfalse .

Syntax Example Environment Variable --usb

API and Console

authrpc.addr

Listening address for authenticated APIs. The default value is "localhost" .

Syntax Example Environment Variable --authrpc.addr

authrpc.jwtsecret

Path to a JWT secret to use for authenticated RPC endpoints.

Syntax Example Environment Variable --authrpc.jwtsecret

authrpc.port

Listening port for authenticated APIs. The default value is8551.

Syntax Example Environment Variable -- authrpc.port

authrpc.vhosts

Comma separated list of virtual hostnames from which to accept requests (server enforced). The default value is "localhost" . Accepts '*' wildcard.

Syntax Example Environment Variable --authrpc.vhosts

exec

Execute JavaScript statement.

Syntax Example Environment Variable --exec

graphql

Enable GraphQL on the HTTP-RPC server. Note that GraphQL can only be started if an HTTP server is started as well. The default value is false.

Syntax Example Environment Variable --graphql

graphql.corsdomain

Comma separated list of domains from which to accept cross origin requests (browser enforced).

Syntax Example Environment Variable -- graphql.corsdomain

graphql.vhosts

Comma separated list of virtual hostnames from which to accept requests (server enforced). The default value is "localhost" . Accepts '*' wildcard.

Syntax Example Environment Variable -- graphql.vhosts

header

Pass custom headers to the RPC server when using--remotedb or the geth attach console. This flag can be given multiple times.

Syntax Example Environment Variable --header,-H

http

Enable the HTTP-RPC server. The default value isfalse .

Syntax Example Environment Variable --http

http.addr

HTTP-RPC server listening interface. The default value is "localhost" .

Syntax Example Environment Variable -- http.addr

http.api

API's offered over the HTTP-RPC interface.

Syntax Example Environment Variable --http.api

http.corsdomain

Comma separated list of domains from which to accept cross origin requests (browser enforced).

Syntax Example Environment Variable --http.corsdomain

http.port

HTTP-RPC server listening port. The default value is8545.

Syntax Example Environment Variable -- http.port

http.rpcprefix`[](https://docs.optimism.io/builders/node-operators/configuration/execution-config#httprpcprefix)

HTTP path prefix on which JSON-RPC is served. Use '/' to serve on all paths.

Syntax Example Environment Variable --http.rpcprefix

http.vhosts

Comma separated list of virtual hostnames from which to accept requests (server enforced). The default value is "localhost" . Accepts '*' wildcard.

Syntax Example Environment Variable --http.vhosts

ipcdisable

Disable the IPC-RPC server. The default value isfalse .

Syntax Example Environment Variable --ipcdisable

ipcpath

Filename for IPC socket/pipe within the datadir (explicit paths escape it).

Syntax Example Environment Variable --ipcpath

jspath

JavaScript root path forloadScript . The default value is. (current directory).

Syntax Example Environment Variable -- jspath

preload

Comma separated list of JavaScript files to preload into the console.

Syntax Example Environment Variable --preload

rpc.allow-unprotected-txs

Allow for unprotected (non EIP155 signed) transactions to be submitted via RPC. The default value is false .

Syntax Example Environment Variable --rpc.allow-unprotected-txs

rpc.batch-request-limit

Maximum number of requests in a batch. The default value is 1000.

Syntax Example Environment Variable --rpc.batch-request-limit=

rpc.batch-response-max-size

Maximum number of bytes returned from a batched call. The default value is 25000000.

Syntax Example Environment Variable --rpc.batch-response-max-size=

rpc.enabledeprecatedpersonal

Enables the (deprecated) personal namespace. The default value isfalse .

Syntax Example Environment Variable --rpc.enabledeprecatedpersonal

rpc.evmtimeout

Sets a timeout used for eth call (0=infinite). The default value is5s.

Syntax Example Environment Variable --rpc.evmtimeout

rpc.gascap

Sets a cap on gas that can be used in eth call/estimateGas (0=infinite). The default value is500000000.

Syntax Example Environment Variable --rpc.gascap=

rpc.txfeecap

Sets a cap on transaction fee (in ether) that can be sent via the RPC APIs (0 = no cap). The default value is1.

Syntax Example Environment Variable --rpc.txfeecap=

ws

Enable the WS-RPC server. The default value isfalse.

Syntax Example Environment Variable --ws

ws.addr

WS-RPC server listening interface. The default value is "localhost" .

Syntax Example Environment Variable --ws.addr=

ws.api

API's offered over the WS-RPC interface.

Syntax Example Environment Variable --ws.api=

ws.origins

Origins from which to accept websockets requests.

Syntax Example Environment Variable --ws.origins=

ws.port

WS-RPC server listening port. The default value is 8546.

Syntax Example Environment Variable --ws.port=

ws.rpcprefix

HTTP path prefix on which JSON-RPC is served over WS. Use '/' to serve on all paths.

Syntax Example Environment Variable --ws.rpcprefix=

Developer Chain

dev

Ephemeral proof-of-authority network with a pre-funded developer account, mining enabled. The default value isfalse .

Syntax Example Environment Variable --dev

dev.gaslimit

Initial block gas limit. The default value is11500000.

Syntax Example Environment Variable --dev.gaslimit=

dev.period

Block period to use in developer mode (0 = mine only if transaction pending). The default value is 0.

Syntax Example Environment Variable --dev.period=

Ethereum

bloomfilter.size

Megabytes of memory allocated to bloom-filter for pruning. The default value is 2048.

Syntax Example Environment Variable --bloomfilter.size=

config

TOML configuration file.

Syntax Example Environment Variable --config=

datadir

Data directory for the databases and keystore. The default value is/home/.ethereum .

Syntax Example Environment Variable --datadir=

datadir.ancient

Root directory for ancient data (default = inside chaindata).

Syntax Example Environment Variable --datadir.ancient=

datadir.minfreedisk

Minimum free disk space in MB, once reached triggers auto shut down (default = --cache.gc converted to MB, 0 = disabled).

Syntax Example Environment Variable --datadir.minfreedisk=

db.engine

Backing database implementation to use ('pebble' or 'leveldb').

Syntax Example Environment Variable --db.engine=

eth.requiredblocks

Comma separated block number-to-hash mappings to require for peering (=).

Syntax Example Environment Variable --eth.requiredblocks=

exitwhensynced

Exits after block synchronization completes. The default value isfalse .

Syntax Example Environment Variable --exitwhensynced

goerli

Görli network: pre-configured proof-of-authority test network. The default value isfalse .

Syntax Example Environment Variable --goerli

holesky

Holesky network: pre-configured proof-of-stake test network. The default value isfalse .

Syntax Example Environment Variable --holesky

mainnet

Ethereum mainnet. The default value isfalse.

Syntax Example Environment Variable --mainnet

networkid

Explicitly set network id (integer). The default value is 1 . For testnets: use --goerli, --sepolia, --holesky instead.

Syntax Example Environment Variable --networkid

op-network, beta.op-network

Select a pre-configured OP-Stack network (warning: op-mainnet and op-goerli require special sync, datadir is recommended), options: base-devnet-0-goerli-dev-0, base-devnet-0-sepolia-dev-0, base-goerli, base-mainnet, base-sepolia, conduit-devnet-0-goerli-dev-0, lyra-mainnet, mode-mainnet, op-goerli, op-labs-chaosnet-0-goerli-dev-0, op-labs-devnet-0-goerli-dev-0, op-mainnet, op-sepolia, oplabs-devnet-0-sepolia-dev-0, orderly-mainnet, pgn-mainnet, pgn-sepolia, zora-mainnet, zora-sepolia

Syntax Example Environment Variable --op-network=

override.cancun

Manually specify the Cancun fork timestamp, overriding the bundled setting. The default value is 0.

Syntax Example Environment Variable --override.cancun=

override.canyon

Manually specify the Optimism Canyon fork timestamp, overriding the bundled setting. The default value is0.

Syntax Example Environment Variable --override.canyon=

override.ecotone

Manually specify the Optimism Ecotone fork timestamp, overriding the bundled setting. The default value is0.

Syntax Example Environment Variable --override.ecotone=

override.interop

Manually specify the Optimism Interop feature-set fork timestamp, overriding the bundled setting. The default value is 0.

Syntax Example Environment Variable --override.interop=

override.verkle

Manually specify the Verkle fork timestamp, overriding the bundled setting. The default value is 0.

Syntax Example Environment Variable --override.verkle=

sepolia

Sepolia network: pre-configured proof-of-work test network. The default value isfalse .

Syntax Example Environment Variable --sepolia

snapshot

Enables snapshot-database mode. The default value istrue.

Syntax Example Environment Variable -- snapshot

Gas Price Oracle

gpo.blocks

Number of recent blocks to check for gas prices. The default value is 20.

Syntax Example Environment Variable --gpo.blocks=

gpo.ignoreprice

Gas price below which GPO will ignore transactions. The default value is2.

Syntax Example --gpo.ignoreprice=

gpo.maxprice

Maximum transaction priority fee (or gasprice before London fork) to be recommended by GPO. The default value is500000000000.

Syntax Example --gpo.maxprice=

gpo.minsuggestedpriorityfee

Minimum transaction priority fee to suggest. Used on OP chains when blocks are not full. The default value is1000000 .

Syntax Example --gpo.minsuggestedpriorityfee=

gpo.percentile

Suggested gas price is the given percentile of a set of recent transaction gas prices. The default value is 60 .

Syntax Example Environment Variable --gpo.percentile=

Light Client

light.egress

Outgoing bandwidth limit for serving light clients (deprecated). The default value is0.

Syntax Example Environment Variable --light.egress=

light.ingress

Incoming bandwidth limit for serving light clients (deprecated). The default value is0.

Syntax Example Environment Variable --light.ingress=

light.maxpeers

Maximum number of light clients to serve, or light servers to attach to (deprecated). The default value is 100.

Syntax Example Environment Variable -- light.maxpeers=

light.nopruning

Disable ancient light chain data pruning (deprecated). The default value isfalse .

Syntax Example Environment Variable --light.nopruning

light.nosyncserve

Enables serving light clients before syncing (deprecated) The default value isfalse .

Syntax Example Environment Variable --light.nosyncserve

light.serve

Maximum percentage of time allowed for serving LES requests (deprecated). The default value is0.

Syntax Example Environment Variable -- light.serv=

Logging and Debugging

log.compress

Compress the log files. The default value isfalse.

Syntax Example Environment Variable -- log.compress

log.file

Write logs to a file.

Syntax Example Environment Variable -- log.file=

log.format

Log format to use (json|logfmt|terminal).

Syntax Example Environment Variable -- log.format=

log.maxage

Maximum number of days to retain a log file. The default value is 30 .

Syntax Example Environment Variable --log.maxage=

log.maxbackups

Maximum number of log files to retain. The default value is 10.

Syntax Example Environment Variable -- log.maxbackups=

log.maxsize

Maximum size in MBs of a single log file. The default value is 100.

Syntax Example Environment Variable -- log.maxsize=

log.rotate

Enables log file rotation. The default value isfalse .

Syntax Example Environment Variable -- log.rotate

log.vmodule

Per-module verbosity: comma-separated list of (e.g. eth/*=5,p2p=4).

Syntax Example Environment Variable --log.vmodule=

nocompaction

Disables database compaction after import. The default value isfalse .

Syntax Example Environment Variable --nocompaction

pprof

Enable the pprof HTTP server. The default value is false .

Syntax Example Environment Variable --pprof

pprof.addr

pprof HTTP server listening interface. The default value is "127.0.0.1".

Syntax Example Environment Variable --pprof.addr=

pprof.blockprofilerate

Turn on block profiling with the given rate. The default value is0.

Syntax Example Environment Variable --pprof.blockprofilerate=

pprof.cpuprofile

Write CPU profile to the given file.

Syntax Example --pprof.cpuprofile=

pprof.memprofilerate

Turn on memory profiling with the given rate. The default value is524288.

Syntax Example Environment Variable --pprof.memprofilerate=

pprof.port

pprof HTTP server listening port. The default value is 6060.

Syntax Example Environment Variable --pprof.port=

remotedb

URL for remote database.

Syntax Example Environment Variable --remotedb=

trace

Write execution trace to the given file.

Syntax Example Environment Variable --trace=

verbosity

Logging verbosity: 0=silent, 1=error, 2=warn, 3=info, 4=debug, 5=detail. The default value is3 .

Syntax Example Environment Variable --verbosity=

Metrics and Stats

ethstats

Reporting URL of an ethstats service (nodename:secret@host:port).

Syntax Example Environment Variable --ethstats=

metrics

Enable metrics collection and reporting. The default value is alse .

Syntax Example Environment Variable --metrics

metrics.addr

Enable stand-alone metrics HTTP server listening interface.

Syntax Example Environment Variable --metrics.addr=

metrics.expensive

Enable expensive metrics collection and reporting. The default value isfalse .

Syntax Example Environment Variable --metrics.expensive

metrics.influxdb

Enable metrics export/push to an external InfluxDB database. The default value isfalse .

Syntax Example Environment Variable --metrics.influxdb

metrics.influxdb.bucket

InfluxDB bucket name to push reported metrics to (v2 only). The default value is "geth".

Syntax Example Environment Variable --metrics.influxdb.bucket=

metrics.influxdb.database

InfluxDB database name to push reported metrics to. The default value is "geth" .

Syntax Example Environment Variable --metrics.influxdb.database=

metrics.influxdb.endpoint

InfluxDB API endpoint to report metrics to. The default value is "http://localhost:8086" .

Syntax Example Environment Variable --metrics.influxdb.endpoint=

metrics.influxdb.organization

InfluxDB organization name (v2 only). The default value is "geth" .

Syntax Example Environment Variable --metrics.influxdb.organization=

metrics.influxdb.password

Password to authorize access to the database. The default value is "test" .

Syntax Example Environment Variable --metrics.influxdb.password=

metrics.influxdb.tags

Comma-separated InfluxDB tags (key/values) attached to all measurements. The default value is "host=localhost" .

Syntax Example Environment Variable --metrics.influxdb.tags=

metrics.influxdb.token

Token to authorize access to the database (v2 only). The default value is "test".

Syntax Example Environment Variable --metrics.influxdb.token=

metrics.influxdb.username

Username to authorize access to the database. The default value is "test" .

Syntax Example Environment Variable --metrics.influxdb.username=

metrics.influxdbv2

Enable metrics export/push to an external InfluxDB v2 database. The default value is false .

Syntax Example Environment Variable --metrics.influxdbv2

metrics.port

Metrics HTTP server listening port. The default value is6060. Please note that--metrics.addr must be set to start the server.

Syntax Example Environment Variable --metrics.port=

Miner

mine

Enable mining. The default value isfalse.

Syntax Example Environment Variable --mine

miner.etherbase

0x prefixed public address for block mining rewards.

Syntax Example Environment Variable --miner.etherbase=

miner.extradata

Block extra data set by the miner (default = client version).

Syntax Example Environment Variable --miner.extradata=

miner.gaslimit

Target gas ceiling for mined blocks. The default value is 30000000 .

Syntax Example Environment Variable --miner.gaslimit=

miner.gasprice

Minimum gas price for mining a transaction. The default value is0.

Syntax Example Environment Variable --miner.gasprice=

miner.newpayload-timeout

Specify the maximum time allowance for creating a new payload. The default value is2s .

Syntax Example Environment Variable --miner.newpayload-timeout=

miner.recommit

Time interval to recreate the block being mined. The default value is2s .

Syntax Example Environment Variable --miner.recommit=

Miscellaneous

help

Show help. This is typically used to display command-line options and usage information.

Syntax Example --help or-h

synctarget

Hash of the block to full sync to (dev testing feature).

Syntax Example Environment Variable --synctarget=

version

Nodes built from source do not output the correct version numbers that are reported on the GitHub release page. Print the version. This option is typically used to display the version of the software.

Syntax Example --version or-v

Networking

bootnodes

Comma separated enode URLs for P2P discovery bootstrap.

Syntax Example Environment Variable --bootnodes=

discovery.dns

Sets DNS discovery entry points (use "" to disable DNS).

Syntax Example Environment Variable -- discovery.dns=

discovery.port

Use a custom UDP port for P2P discovery. The default value is 30303.

Syntax Example Environment Variable --discovery.port=

discovery.v4

Enables the V4 discovery mechanism. The default value istrue .

Syntax Example Environment Variable --discovery.v4 or--discv4

discovery.v5

Enables the experimental RLPx V5 (Topic Discovery) mechanism. The default value isfalse .

Syntax Example Environment Variable --discovery.v5 or--discv5

identity

Custom node name.

Syntax Example Environment Variable --identity=

maxpeers

Maximum number of network peers (network disabled if set to 0). The default value is50.

Syntax Example Environment Variable --maxpeers=

maxpendpeers

Maximum number of pending connection attempts (defaults used if set to 0). The default value is0.

Syntax Example Environment Variable --maxpendpeers=

nat

NAT port mapping mechanism (any|none|upnp|pmp|pmp:|extip:). The default value is "any" .

Syntax Example Environment Variable --nat=

netrestrict

Restricts network communication to the given IP networks (CIDR masks).

Syntax Example Environment Variable --netrestrict=

nodekey

P2P node key file.

Syntax Example Environment Variable --nodekey=

nodekeyhex

P2P node key as hex (for testing).

Syntax Example Environment Variable --nodekeyhex=

nodiscover

Disables the peer discovery mechanism (manual peer addition). The default value isfalse .

Syntax Example Environment Variable --nodiscover

port

Network listening port. The default value is 30303.

Syntax Example Environment Variable --port=

Performance Tuning

cache

Megabytes of memory allocated to internal caching. The default is 4096 MB for mainnet full node and 128 MB for light mode.

Syntax Example Environment Variable --cache=

cache.blocklogs

Size (in number of blocks) of the log cache for filtering. The default value is 32.

Syntax Example Environment Variable --cache.blocklogs=

cache.database

Percentage of cache memory allowance to use for database I/O. The default value is50.

Syntax Example Environment Variable --cache.database=

cache.gc

Percentage of cache memory allowance to use for trie pruning. The default is 25% for full mode and 0% for archive mode.

Syntax Example Environment Variable --cache.gc=

cache.noprefetch

Disable heuristic state prefetch during block import (less CPU and disk IO, more time waiting for data). The default value isfalse.

Syntax Example Environment Variable --cache.noprefetch

cache.preimages

Enable recording the SHA3/keccak preimages of trie keys. The default value isfalse .

Syntax Example Environment Variable --cache.preimages

cache.snapshot

Percentage of cache memory allowance to use for snapshot caching. The default is10% for full mode and20% for archive mode.

Syntax Example Environment Variable --cache.snapshot=

cache.trie

Percentage of cache memory allowance to use for trie caching. The default is 15% for full mode and 30% for archive mode.

Syntax Example Environment Variable --cache.trie=

crypto.kzg

KZG library implementation to use; gokzg (recommended) or ckzg. The default value is "gokzg".

Syntax Example Environment Variable --crypto.kzg=

fdlimit

Raise the open file descriptor resource limit. The default is the system fd limit.

Syntax Example Environment Variable --fdlimit=

Rollup Node

rollup.computependingblock

By default, the pending block equals the latest block to save resources and not leak transactions from the tx-pool. This flag enables computing of the pending block from the tx-pool instead. The default value isfalse.

Syntax Example Environment Variable --rollup.computependingblock

rollup.disabletxpoolgossip

Disable transaction pool gossip. The default value isfalse.

Syntax Example Environment Variable --rollup.disabletxpoolgossip

rollup.halt

Opt-in option to halt on incompatible protocol version requirements of the given level (major/minor/patch/none), as signaled through the Engine API by the rollup node.

Syntax Example Environment Variable --rollup.halt=

rollup.historicalrpc

RPC endpoint for historical data.

Syntax Example Environment Variable --rollup.historicalrpc

rollup.historicalrpctimeout

Timeout for historical RPC requests. The default value is5s.

Syntax Example Environment Variable --rollup.historicalrpctimeout=

rollup.sequencerhttp

HTTP endpoint for the sequencer mempool.

Syntax Example Environment Variable --rollup.sequencerhttp=

rollup.superchain-upgrades

Apply superchain-registry config changes to the local chain-configuration. The default value istrue.

Syntax Example Environment Variable --rollup.superchain-upgrades or--beta.rollup.superchain-upgrades

State History Management

gcmode

Blockchain garbage collection mode, only relevant instate.scheme=hash . Options are "full" and "archive". The default value is "full" .

Syntax Example Environment Variable --gcmode=

history.state

Number of recent blocks to retain state history for. The default is 90000 blocks, with 0 representing the entire chain.

Syntax Example Environment Variable --history.state=

history.transactions

Number of recent blocks to maintain transactions index for. The default is about one year (2350000 blocks), with0 representing the entire chain.

Syntax Example Environment Variable --history.transactions=

state.scheme

Scheme to use for storing Ethereum state. Options are 'hash' or 'path'.

Syntax Example Environment Variable --state.scheme=

syncmode

Blockchain sync mode. Options are "snap", or "full". The default value is "snap".

Syntax Example Environment Variable --syncmode=

Transaction Pool (Blob)

blobpool.datacap

Disk space to allocate for pending blob transactions (soft limit). The default value is 10737418240.

Syntax Example Environment Variable --blobpool.datacap=

blobpool.pricebump

Price bump percentage to replace an already existing blob transaction. The default value is 100.

Syntax Example Environment Variable --blobpool.pricebump=

Transaction Pool (EVM)

txpool.accountqueue

Maximum number of non-executable transaction slots permitted per account. The default value is 64.

Syntax Example Environment Variable --txpool.accountqueue=

txpool.accountslots

Minimum number of executable transaction slots guaranteed per account. The default value is16.

Syntax Example Environment Variable --txpool.accountslots=

txpool.globalqueue

Maximum number of non-executable transaction slots for all accounts. The default value is 1024.

Syntax Example Environment Variable --txpool.globalqueue=

txpool.globalslots

Maximum number of executable transaction slots for all accounts. The default value is 5120 .

Syntax Example Environment Variable --txpool.globalslots=

txpool.journal

Disk journal for local transactions to survive node restarts. The default value is "transactions.rlp".

Syntax Example Environment Variable --txpool.journal=

txpool.journalremotes

Includes remote transactions in the journal. The default value isfalse .

Syntax Example Environment Variable --txpool.journalremotes

txpool.lifetime

Maximum amount of time non-executable transactions are gueued. The default value is 3h0m0s.

Syntax Example Environment Variable --txpool.lifetime=

txpool.locals

Comma-separated accounts to treat as locals (no flush, priority inclusion).

Syntax Example Environment Variable --txpool.locals=

txpool.nolocals

Disables price exemptions for locally submitted transactions. The default value isfalse.

Syntax Example Environment Variable --txpool.nolocals

txpool.pricebump

Price bump percentage to replace an already existing transaction. The default value is10.

Syntax Example Environment Variable --txpool.pricebump=

txpool.pricelimit

Minimum gas price tip to enforce for acceptance into the pool. The default value is1.

Syntax Example Environment Variable --txpool.pricelimit=

txpool.rejournal

Time interval to regenerate the local transaction journal. The default value is1h0m0s.

Syntax Example Environment Variable --txpool.rejournal=

Virtual Machine

vmdebug

Record information useful for VM and contract debugging. The default value is false .

Syntax Example Environment Variable --vmdebug

Consensus Layer Configuration Using Blobs