

# Metrics

Nethermind provides a few ways of gathering information, monitoring and collecting metrics about itself. The following options are available at the moment:

1. [dotnet-counters.md](#)
2. [setting-up-local-metrics-infrastructure.md](#)

## Parameters by namespace

### Aura

- `nethermind_au_ra_step`
- Current AuRa step
- `nethermind_commit_hash_transaction`
- RANDAO number of commit hash transactions
- `nethermind_emit_initiate_change`
- POSDAO number of emit init change transactions
- `nethermind_reported_benign_misbehaviour`
- Number of reported benign misbehaviour validators
- `nethermind_reported_malicious_misbehaviour`
- Number of reported malicious misbehaviour validators
- `nethermind_reveal_number`
- RANDAO number of reveal number transactions
- `nethermind_sealed_transactions`
- Number of sealed transactions generated by engine
- `nethermind_validators_count`
- Number of current AuRa validators

### Blockchain

- `nethermind_best_known_block_number`
- The estimated highest block available.
- `nethermind_blockchain_height`
- The current height of the canonical chain.
- `nethermind_blocks`
- Total number of blocks processed
- `nethermind_blocks_sealed`
- Total number of sealed blocks
- `nethermind_failed_block_seals`
- Total number of failed block seals
- `nethermind_gas_limit`
- Gas Limit for processed blocks
- `nethermind_gas_used`
- Gas Used in processed blocks
- `nethermind_last_difficulty`
- Difficulty of the last block
- `nethermind_mgas`
- Total MGas processed
- `nethermind_processing_queue_size`
- Number of blocks awaiting for processing.
- `nethermind_recovery_queue_size`
- Number of blocks awaiting for recovery of public keys from signatures.
- `nethermind_reorganizations`
- Total number of chain reorganizations
- `nethermind_total_difficulty`
- Total difficulty on the chain
- `nethermind_transactions`
- Total number of transactions processed

### Db

- `nethermind_bad_blocks_db_reads`
- Number of BadBlocks DB reads.
- `nethermind_bad_blocks_db_writes`
- Number of BadBlocks DB writes.
- `nethermind_blob_transactions_db_reads`

- Number of BlobTransactions DB reads.
- nethermind\_blob\_transactions\_db\_writes
- Number of BlobTransactions DB writes.
- nethermind\_block\_infos\_db\_reads
- Number of Block Infos DB reads.
- nethermind\_block\_infos\_db\_size
- Size of blockInfos DB in bytes
- nethermind\_block\_infos\_db\_writes
- Number of Block Infos DB writes.
- nethermind\_block\_number\_db\_reads
- Number of BlockNumbers DB reads.
- nethermind\_block\_number\_db\_writes
- Number of BlockNumbers DB writes.
- nethermind\_blocks\_db\_reads
- Number of Blocks DB reads.
- nethermind\_blocks\_db\_size
- Size of blocks DB in bytes
- nethermind\_blocks\_db\_writes
- Number of Blocks DB writes.
- nethermind\_bloom\_db\_reads
- Number of Bloom DB reads.
- nethermind\_bloom\_db\_size
- Size of bloom DB in bytes
- nethermind\_bloom\_db\_writes
- Number of Bloom DB writes.
- nethermind\_c\_h\_t\_db\_reads
- Number of CHT DB reads.
- nethermind\_cht\_db\_size
- Size of cht DB in bytes
- nethermind\_c\_h\_t\_db\_writes
- Number of CHT DB writes.
- nethermind\_code\_db\_reads
- Number of Code DB reads.
- nethermind\_code\_db\_size
- Size of code DB in bytes
- nethermind\_code\_db\_writes
- Number of Code DB writes.
- nethermind\_db\_block\_cache\_memory\_size
- Size of unmanaged memory for DB block caches in bytes
- nethermind\_db\_index\_filter\_memory\_size
- Size of unmanaged memory for DB indexes and filters in bytes
- nethermind\_db\_memtable\_memory\_size
- Size of unmanaged memory for DB memtables in bytes
- nethermind\_db\_stats
- Metrics extracted from RocksDB Compaction Stats and DB Statistics
- nethermind\_db\_total\_memory\_size
- Size of total unmanaged memory for DB in bytes
- nethermind\_header\_db\_reads
- Number of Headers DB reads.
- nethermind\_header\_db\_writes
- Number of Headers DB writes.
- nethermind\_headers\_db\_size
- Size of headers DB in bytes
- nethermind\_metadata\_db\_reads
- Number of Metadata DB reads.
- nethermind\_metadata\_db\_size
- Size of metadata DB in bytes
- nethermind\_metadata\_db\_writes
- Number of Metadata DB writes.
- nethermind\_other\_db\_reads
- Number of other DB reads.
- nethermind\_other\_db\_writes
- Number of other DB writes.
- nethermind\_receipts\_db\_reads
- Number of Receipts DB reads.
- nethermind\_receipts\_db\_size
- Size of receipts DB in bytes
- nethermind\_receipts\_db\_writes

- Number of Receipts DB writes.
- nethermind\_state\_db\_pruning
- Indicator if Statedb is being pruned.
- nethermind\_state\_db\_reads
- Number of State DB reads.
- nethermind\_state\_db\_size
- Size of state DB in bytes
- nethermind\_state\_db\_writes
- Number of State DB writes.
- nethermind\_state\_tree\_reads
- Number of State Trie reads.
- nethermind\_state\_tree\_writes
- Number of Blocks Trie writes.
- nethermind\_storage\_tree\_reads
- Number of storage trie reads.
- nethermind\_storage\_tree\_writes
- Number of storage trie writes.
- nethermind\_witness\_db\_reads
- Number of Witness DB reads.
- nethermind\_witness\_db\_size
- Size of witness DB in bytes
- nethermind\_witness\_db\_writes
- Number of Witness DB writes.

## Evm

- nethermind\_blockhash\_opcode
- Number of BLOCKHASH opcodes executed.
- nethermind\_bn254\_add\_precompile
- Number of BN254\_ADD precompile calls.
- nethermind\_bn254\_mul\_precompile
- Number of BN254\_MUL precompile calls.
- nethermind\_bn254\_pairing\_precompile
- Number of BN254\_PAIRING precompile calls.
- nethermind\_calls
- Number of calls to other contracts.
- nethermind\_creates
- Number of contract create calls.
- nethermind\_ec\_recover\_precompile
- Number of EC\_RECOVERY precompile calls.
- nethermind\_empty\_calls
- Number of calls made to addresses without code.
- nethermind\_evm\_exceptions
- Number of EVM exceptions thrown by contracts.
- nethermind\_m\_copy\_opcode
- Number of MCOPY opcodes executed.
- nethermind\_mod\_exp\_opcode
- Number of MODEXP precompiles executed.
- nethermind\_mod\_exp\_precompile
- Number of MODEXP precompile calls.
- nethermind\_point\_evaluation\_precompile
- Number of Point Evaluation precompile calls.
- nethermind\_ripemd160\_precompile
- Number of RIPEMD160 precompile calls.
- nethermind\_self\_destructs
- Number of SELFDESTRUCT calls.
- nethermind\_sha256\_precompile
- Number of SHA256 precompile calls.
- nethermind\_sload\_opcode
- Number of SLOAD opcodes executed.
- nethermind\_sstore\_opcode
- Number of SSTORE opcodes executed.
- nethermind\_tload\_opcode
- Number of TLOAD opcodes executed.
- nethermind\_tstore\_opcode
- Number of TSTORE opcodes executed.

## JsonRpc

- `nethermind_json_rpc_bytes_received`
- Number of JSON RPC bytes received.
- `nethermind_json_rpc_bytes_sent`
- Number of JSON RPC bytes sent.
- `nethermind_json_rpc_errors`
- Number of JSON RPC requests processed with errors.
- `nethermind_json_rpc_invalid_requests`
- Number of JSON RPC requests that were invalid.
- `nethermind_json_rpc_request_deserialization_failures`
- Number of JSON RPC requests that failed JSON deserialization.
- `nethermind_json_rpc_requests`
- Total number of JSON RPC requests received by the node.
- `nethermind_json_rpc_successes`
- Number of JSON RPC requests processed successfully.

## Merge

- `nethermind_forkchoice_updated_execution_time`
- ForkchoiceUpdated request execution time
- `nethermind_get_payload_requests`
- Number of GetPayload Requests
- `nethermind_new_payload_execution_time`
- NewPayload request execution time
- `nethermind_number_of_transactions_in_get_payload`
- Number of Transactions included in the Last GetPayload Request

## Network

- `nethermind_already_connected_disconnects`
- Number of received disconnects due to already connected
- `nethermind_breach_of_protocol_disconnects`
- Number of received disconnects due to breach of protocol
- `nethermind_client_quitting_disconnects`
- Number of received disconnects due to client quitting
- `nethermind_disconnect_requested_disconnects`
- Number of received disconnects due to disconnect requested
- `nethermind_eth62_block_bodies_received`
- Number of eth.62 BlockBodies messages received
- `nethermind_eth62_block_headers_received`
- Number of eth.62 BlockHeaders messages received
- `nethermind_eth62_get_block_bodies_received`
- Number of eth.62 GetBlockBodies messages received
- `nethermind_eth62_get_block_headers_received`
- Number of eth.62 GetBlockHeaders messages received
- `nethermind_eth62_new_block_hashes_received`
- Number of eth.62 NewBlockHashes messages received
- `nethermind_eth62_new_block_received`
- Number of eth.62 NewBlock messages received
- `nethermind_eth62_transactions_received`
- Number of eth.62 Transactions messages received
- `nethermind_eth63_get_node_data_received`
- Number of eth.63 GetNodeData messages received
- `nethermind_eth63_get_receipts_received`
- Number of eth.63 GetReceipts messages received
- `nethermind_eth63_node_data_received`
- Number of eth.63 NodeData messages received
- `nethermind_eth63_receipts_received`
- Number of eth.63 Receipts messages received
- `nethermind_eth65_get_pooled_transactions_received`
- Number of eth.65 GetPooledTransactions messages received
- `nethermind_eth65_get_pooled_transactions_requested`
- Number of eth.65 GetPooledTransactions messages sent
- `nethermind_eth65_new_pooled_transaction_hashes_received`
- Number of eth.65 NewPooledTransactionHashes messages received
- `nethermind_eth65_new_pooled_transaction_hashes_sent`
- Number of eth.65 NewPooledTransactionHashes messages sent
- `nethermind_eth65_pooled_transactions_received`
- Number of eth.65 PooledTransactions messages received

- nethermind\_eth66\_block\_bodies\_received
- Number of eth.66 BlockBodies messages received
- nethermind\_eth66\_block\_headers\_received
- Number of eth.66 BlockHeaders messages received
- nethermind\_eth66\_get\_block\_bodies\_received
- Number of eth.66 GetBlockBodies messages received
- nethermind\_eth66\_get\_block\_headers\_received
- Number of eth.66 GetBlockHeaders messages received
- nethermind\_eth66\_get\_node\_data\_received
- Number of eth.66 GetNodeData messages received
- nethermind\_eth66\_get\_pooled\_transactions\_received
- Number of eth.66 GetPooledTransactions messages received
- nethermind\_eth66\_get\_pooled\_transactions\_requested
- Number of eth.66 GetPooledTransactions messages sent
- nethermind\_eth66\_get\_receipts\_received
- Number of eth.66 GetReceipts messages received
- nethermind\_eth66\_node\_data\_received
- Number of eth.66 NodeData messages received
- nethermind\_eth66\_pooled\_transactions\_received
- Number of eth.66 PooledTransactions messages received
- nethermind\_eth66\_receipts\_received
- Number of eth.66 Receipts messages received
- nethermind\_eth68\_new\_pooled\_transaction\_hashes\_received
- Number of eth.68 NewPooledTransactionHashes messages received
- nethermind\_eth68\_new\_pooled\_transaction\_hashes\_sent
- Number of eth.68 NewPooledTransactionHashes messages sent
- nethermind\_get\_node\_data\_received
- Number of GetNodeData messages received via NodeData protocol
- nethermind\_handshakes
- Number of devp2p handshakes
- nethermind\_handshake\_timeouts
- Number of devp2p handshake timeouts
- nethermind\_hellos\_received
- Number of devp2p hello messages received
- nethermind\_hellos\_sent
- Number of devp2p hello messages sent
- nethermind\_incoming\_connections
- Number of incoming connection.
- nethermind\_incompatible\_p2p\_disconnects
- Number of received disconnects due to incompatible devp2p version
- nethermind\_les\_statuses\_received
- Number of les status messages received
- nethermind\_les\_statuses\_sent
- Number of les status messages sent
- nethermind\_local\_already\_connected\_disconnects
- Number of initiated disconnects due to already connected
- nethermind\_local\_breach\_of\_protocol\_disconnects
- Number of sent disconnects due to breach of protocol
- nethermind\_local\_client\_quitting\_disconnects
- Number of initiated disconnects due to client quitting
- nethermind\_local\_disconnect\_requested\_disconnects
- Number of initiated disconnects due to disconnect requested
- nethermind\_local\_disconnects\_total
- Number of local disconnects
- nethermind\_local\_incompatible\_p2p\_disconnects
- Number of initiated disconnects due to incompatible devp2p
- nethermind\_local\_null\_node\_identity\_disconnects
- Number of initiated disconnects due to missing node identity
- nethermind\_local\_other\_disconnects
- Number of initiated disconnects due to other reason
- nethermind\_local\_receive\_message\_timeout\_disconnects
- Number of initiated disconnects due to request timeout
- nethermind\_local\_same\_as\_self\_disconnects
- Number of initiated disconnects due to connection to self
- nethermind\_local\_tcp\_subsystem\_error\_disconnects
- Number of initiated disconnects due to TCP error
- nethermind\_local\_too\_many\_peers\_disconnects
- Number of initiated disconnects due to breach of protocol

- `nethermind_local_unexpected_identity_disconnects`
- Number of initiated disconnects due to node identity info mismatch
- `nethermind_local_useless_peer_disconnects`
- Number of sent disconnects due to useless peer
- `nethermind_node_data_received`
- Number of NodeData messages received via NodeData protocol
- `nethermind_null_node_identity_disconnects`
- Number of received disconnects due to missing peer identity
- `nethermind_other_disconnects`
- Number of received disconnects due to other reasons
- `nethermind_outgoing_connections`
- Number of outgoing connection.
- `nethermind_peer_limit`
- The maximum number of peers this node allows to connect.
- `nethermind_receive_message_timeout_disconnects`
- Number of received disconnects due to request timeouts
- `nethermind_remote_disconnects_total`
- Number of remote disconnects
- `nethermind_same_as_self_disconnects`
- Number of received disconnects due to connecting to self
- `nethermind_snap_account_range_received`
- Number of SNAP AccountRange messages received
- `nethermind_snap_byte_codes_received`
- Number of SNAP ByteCodes messages received
- `nethermind_snap_get_account_range_received`
- Number of SNAP GetAccountRange messages received
- `nethermind_snap_get_account_range_sent`
- Number of SNAP GetAccountRange messages sent
- `nethermind_snap_get_byte_codes_received`
- Number of SNAP GetByteCodes messages received
- `nethermind_snap_get_byte_codes_sent`
- Number of SNAP GetByteCodes messages sent
- `nethermind_snap_get_storage_ranges_received`
- Number of SNAP GetStorageRanges messages received
- `nethermind_snap_get_storage_ranges_sent`
- Number of SNAP GetStorageRanges messages sent
- `nethermind_snap_get_trie_nodes_received`
- Number of SNAP GetTrieNodes messages received
- `nethermind_snap_get_trie_nodes_sent`
- Number of SNAP GetTrieNodes messages sent
- `nethermind_snap_storage_ranges_received`
- Number of SNAP StorageRanges messages received
- `nethermind_snap_trie_nodes_received`
- Number of SNAP TrieNodes messages received
- `nethermind_statuses_received`
- Number of eth status messages received
- `nethermind_statuses_sent`
- Number of eth status messages sent
- `nethermind_tcp_subsystem_error_disconnects`
- Number of disconnects due to TCP error
- `nethermind_too_many_peers_disconnects`
- Number of received disconnects due to too many peers
- `nethermind_unexpected_identity_disconnects`
- Number of received disconnects due to peer identity information mismatch
- `nethermind_useless_peer_disconnects`
- Number of received disconnects due to useless peer

## Pruning

- `nethermind_cached_nodes_count`
- Nodes that are currently kept in cache (either persisted or not)
- `nethermind_committed_nodes_count`
- Nodes that have been committed since the session start. These nodes may have been pruned, persisted or replaced.
- `nethermind_deep_pruned_persisted_nodes_count`
- Nodes that have been removed from the cache during deep pruning because they have been persisted before.
- `nethermind_deep_pruning_time`
- Time taken by the last deep pruning.
- `nethermind_last_persisted_block_number`

- Last persisted block number (snapshot).
- nethermind\_loaded\_from\_cache\_nodes\_count
- Number of reads from the node cache.
- nethermind\_loaded\_from\_db\_nodes\_count
- Number of DB reads.
- nethermind\_loaded\_from\_rlp\_cache\_nodes\_count
- Number of reads from the RLP cache.
- nethermind\_memory\_used\_by\_cache
- Estimated memory used by cache.
- nethermind\_persisted\_node\_count
- Nodes that have been persisted since the session start.
- nethermind\_pruned\_persisted\_nodes\_count
- Nodes that have been removed from the cache during pruning because they have been persisted before.
- nethermind\_pruned\_transient\_nodes\_count
- Nodes that have been removed from the cache during pruning because they were no longer needed.
- nethermind\_pruning\_time
- Time taken by the last pruning.
- nethermind\_replaced\_nodes\_count
- Number of nodes that have been exactly the same as other nodes in the cache when committing.
- nethermind\_snapshot\_persistence\_time
- Time taken by the last snapshot persistence.

## Runner

- nethermind\_version
- Version number

## Trie

- nethermind\_tree\_node\_hash\_calculations
- Number of trie node hash calculations.
- nethermind\_tree\_node\_rlp\_decodings
- Number of trie node RLP decodings.
- nethermind\_tree\_node\_rlp\_encodings
- Number of trie node RLP encodings.

## TxPool

- nethermind\_blobs\_in\_block
- Number of blobs in the block.
- nethermind\_blob\_transaction\_count
- Number of blob transactions in pool.
- nethermind\_blob\_transactions\_in\_block
- Number of blob transactions in the block.
- nethermind\_dark\_pool\_ratio\_level1
- Ratio of transactions in the block absent in hashCache.
- nethermind\_dark\_pool\_ratio\_level2
- Ratio of transactions in the block absent in pending transactions.
- nethermind\_eip1559\_transactions\_ratio
- Ratio of 1559-type transactions in the block.
- nethermind\_pending1559\_transactions\_added
- Number of pending 1559-type transactions added to transaction pool.
- nethermind\_pending\_blob\_transactions\_added
- Number of pending blob-type transactions added to transaction pool.
- nethermind\_pending\_transactions\_added
- Number of pending transactions added to transaction pool.
- nethermind\_pending\_transactions\_balance\_below\_value
- Number of pending transactions received that were ignored because balance is less than txn value.
- nethermind\_pending\_transactions\_conflicting\_tx\_type
- Number of transactions rejected because of already pending tx of other type (allowed blob txs or others, not both at once).
- nethermind\_pending\_transactions\_discarded
- Number of pending transactions received that were ignored.
- nethermind\_pending\_transactions\_evicted
- Number of pending transactions evicted from transaction pool.
- nethermind\_pending\_transactions\_gas\_limit\_too\_high
- Number of pending transactions received that were ignored because the gas limit was too high for the block.
- nethermind\_pending\_transactions\_hashes\_received

- Number of hashes of pending transactions received from peers.
- `nethermind_pending_transactions_hashes_sent`
- Number of hashes of pending transactions broadcasted to peers.
- `nethermind_pending_transactions_known`
- Number of already known pending transactions.
- `nethermind_pending_transactions_low_nonce`
- Number of transactions with already used nonce.
- `nethermind_pending_transactions_malformed`
- Number of malformed transactions.
- `nethermind_pending_transactions_nonce_gap`
- Number of pending transactions received that were ignored because of not having preceding nonce of this sender in TxPool.
- `nethermind_pending_transactions_nonce_too_far_in_future`
- Number of transactions with nonce too far in future.
- `nethermind_pending_transactions_not_supported_tx_type`
- Number of pending transactions received that were ignored because of not supported transaction type.
- `nethermind_pending_transactions_passed_filters_but_cannot_compete_on_fees`
- Number of pending transactions received that were ignored after passing early rejections as balance is too low to compete with lowest effective fee in transaction pool.
- `nethermind_pending_transactions_passed_filters_but_cannot_replace`
- Number of pending transactions received that were trying to replace tx with the same sender and nonce and failed.
- `nethermind_pending_transactions_received`
- Number of pending transactions received from peers.
- `nethermind_pending_transactions_sent`
- Number of pending transactions broadcasted to peers.
- `nethermind_pending_transactions_too_low_balance`
- Number of pending transactions received that were ignored because balance too low for fee to be higher than the lowest fee in transaction pool.
- `nethermind_pending_transactions_too_low_fee`
- Number of pending transactions received that were ignored because of fee lower than the lowest fee in transaction pool.
- `nethermind_pending_transactions_too_low_priority_fee`
- Number of pending transactions received that were ignored because of priority fee lower than minimal requirement.
- `nethermind_pending_transactions_unresolvable_sender`
- Number of pending transactions received that were ignored because the sender couldn't be resolved.
- `nethermind_pending_transactions_with_expensive_filtering`
- Number of pending transactions that reached filters which are resource expensive
- `nethermind_pending_transactions_zero_balance`
- Number of pending transactions received that were ignored because balance is zero and cannot pay gas.
- `nethermind_transaction_count`
- Number of transactions in pool. [Edit this page](#) Last updated on Feb 17, 2024 [Previous web3](#) [Next dotnet-counters](#)