How to run an archive node

An Arbitrumarchive node is a full node that maintains an archive of historical chain states. This how-to walks you through the process of configuring an archive node on your local machine so that you can query both pre-Nitro and post-Nitro state data.

caution Most users won't need to configure an archive node . This type of node is great for a small number of use-cases - for example, if you need to process historical data.

Before we begin

Before the Nitro upgrade happened, Arbitrum One was running on the Classic stack for about one year (before block height 22207817). Although the Nitro chain uses the latest snapshot of the Classic chain's state as its genesis state,the Nitro stack can't serve archive requests for pre-Nitro blocks .

Running an Arbitrum Onefull node inarchive mode lets you access both pre-Nitro and post-Nitro blocks, but it requires you to runboth Classic and Nitro nodes together. You may not need to do this, depending on your use case:

Use case Required node type(s) Docs Access theArbitrum network without running your own node Fully managed by third-parties, exposed via RPC endpoints RPC endpoints and providers Run anarchive node forArbitrum Sepolia (testnet) orArbitrum Nova Full node (Nitro) How to run a full node (Nitro) Sendpost-Nitro archive requests Full node (Nitro) How to run a full node (Nitro) Sendpre-Nitro archive requests Full node (Classic) How to run a full node (Classic, pre-Nitro) Sendpost-Nitro and pre-Nitro archive requests Full node (Nitro)and full node (Classic) That's what this how-to is for; you're in the right place.

System requirements

caution The minimum storage requirements will change over time as the Nitro chains grow (growing rates are specified below). We recommend exceeding the minimum requirements as much as you can to minimize risk and maintenance overhead. 1. RAM: 2. 16GB+ for Nitro and 32GB+ for Classic 3. CPU: 4. 4+ core CPU 5. Storage (last updated on January 2024): 6. * Arbitrum One: 8TB SSD, currently growing at a rate of about .67TB per month 7. * Arbitrum Nova: 1.55TB SSD, currently growing at a rate of about .3TB GB per month 8. Docker images: 9. We'll specify these in the below commands; you don't need to manually download them. *Latest Docker image forArbitrum One Nitro 10. * :offchainlabs/nitro-node:v2.3.2-064fa11 11. * Latest Docker image forArbitrum One Classic 12. * :offchainlabs/arb-node:v1.4.5-e97c1a4 13. Database snapshots: 14. * Nitro database snapshot* Use the parameter--init.url= 15. * * on first startup to initialize the Nitro database (you can find a list of snapshotshere 16. * *). Example:--init.url="https://snapshot.arbitrum.foundation/arb1/nitro-archive.tar" 17. * Arbitrum One Classic database snapshot* Download the latest Arbitrum One Classic database snapshot athttps://snapshot.arbitrum.foundation/arb1/classic-archive.tar 18. * * and place it in the mounted point directory 19. * * Note that other chains don't have Classic blocks, and thus don't require an initial genesis database.

Review and configure ports

- RPC:8547
- Sequencer Feed:9642
- WebSocket:8548

Review and configure parameters

Arbitrum Nitro Arbitrum Classic Description --parent-chain.connection.url=
--l1.url=
Provide an standard L1 node RPC endpoint that you run yourself or from a third-party node provider (seeRPC endpoints and providers) --chain.id= --l2.chain-id= SeeRPC endpoints and providers for a list of Arbitrum chains and the respective L2 chain IDs --execution.caching.archive --node.caching.archive Required for running anArbitrum One Nitro archival node and retains past block state - --node.cache.allow-slow-lookup Required for running anArbitrum One Classic archival node. When this option is present, it will load old blocks from disk if not in memory cache. - --core.checkpoint-gas-frequency=156250000 Required for running anArbitrum One Classic archival node.

Run the Docker image(s)

When running a Docker image, an external volume should be mounted to persist the database across restarts. The mount point should be/home/user/.arbitrum/mainnet .

To run both Arbitrum Nitro and/or Arbitrum Classic in archive mode, follow one or more of the below examples:

- Arbitrum One Nitro archive node
- :docker
- run --rm -it -v /some/local/dir/arbitrum:/home/user/.arbitrum -p
- 0.0

- .0.0:8547:8547 -p
- 0.0
- .0.0:8548:8548 offchainlabs/nitro-node:v2.3.2-064fa11 --parent-chain.connection.url https://l1-node:8545 --chain.id
- =
- 42161
- --http.api
- =
- net,web3,eth --http.corsdomain
- =
-
    - --http.addr
- =
- 0.0
- .0.0 --http.vhosts
- =
-
    - --execution.caching.archive
- Arbitrum One Classic archive node
- :docker
- run --rm -it -v /some/local/dir/arbitrum-mainnet/:/home/user/.arbitrum/mainnet -p
- 0.0
- .0.0:8547:8547 -p
- 0.0
- .0.0:8548:8548 offchainlabs/arb-node:v1.4.5-e97c1a4 --l1.url
- =
- https://l1-node:8545/ --node.chain-id
- =
- 42161
- --l2.disable-upstream --node.cache.allow-slow-lookup --core.checkpoint-gas-frequency
- =
- 156250000
- --core.lazy-load-core-machine
- Arbitrum One Nitro archive node with forwarding classic execution support
- :docker
- run --rm -it -v /some/local/dir/arbitrum:/home/user/.arbitrum -p
- 0.0
- .0.0:8547:8547 -p
- 0.0
- .0.0:8548:8548 offchainlabs/nitro-node:v2.3.2-064fa11 --parent-chain.connection.url https://l1-node:8545 --chain.id
- =
- 42161
- --execution.rpc.classic-redirect
- =
- <
- classic
- node
- RPC
-

- --http.api
- =
- net,web3,eth --http.corsdomain
- =
-
    - --http.addr
- =
- 0.0
- .0.0 --http.vhosts
- =
-
    - --execution.caching.archive

Note that the above commands both map to port8547 on their hosts. If you want to run both on the same host, you should edit those mapping to different ports, and specify your Classic node RPC url as in your Nitro start command. To verify the connection health of your node(s), seeDocker network between containers - Docker Networking Example.

A note on permissions

The Docker image is configured to run as non-rootUID 1000 . If you're running in Linux and you're getting permission errors

when trying to run the Docker image, run this command to allow all users to update the persistent folders, replacingarbitrum-mainnet as needed:

mkdir /some/local/dir/arbitrum-mainnet chmod -fR 777 /some/local/dir/arbitrum-mainnet

Optional parameters

Both Nitro and Classic have multiple other parameters that can be used to configure your node. For a full comprehensive list of the available parameters, use the flag--help .

Troubleshooting

If you run into any issues, visit thenode-running troubleshooting guide . Edit this page Last updatedonMar 22, 2024 Previous ArbOS 11 Next How to run a validator