Set Up a Full Node

Installing and running a full node allows you to read orderbook and onchain data from a network, as well as place, confirm and cancel orders directly on that network.

Code snippets on this page use example values. Replace them with your own. See theNetwork Configuration section of the documentation for network constants and other resources you need to configure a full node.

Prerequisites

To run a full node, the system that hosts the node must meet the following minimum requirements:

- Linux (Ubuntu Server 22.04.3 or later recommended)
- 8-core CPU (ARM or x86_64 architecture)
- 64 GB RAM
- 500 GB SSD NVMe Storage

Choose a Method

To set up a full node, you can either:

1. Usethis script(opens in a new tab)
2. , provided by dYdX, to automate setup.

Save the script with an.sh extension in yourHOME directory. Edit the script, replacing default values in fields suchVERSION andCHAIN-ID with your own. Run the script with the following commands:

To find the current version of thedYdX foundation(opens in a new tab) mainnet, see the recommended protocol version onmintscan.io(opens in a new tab) . To find network constants such as chain IDs, see theNetwork Configuration section of the documentation. cd HOME bash create_full_node.sh 1. Or, follow the steps on this page to manually set up a full node.

Manual Installation Steps

The following steps will guide you through manually setting up a full node.

Run the commands in this procedure from your home directory unless otherwise specified. To change directories to your home folder, run the following command:

cd HOME

Step 1: Update your system and prepare to install dependencies

To download system updates and installcurl(opens in a new tab) ,jq(opens in a new tab) , andlz4(opens in a new tab) , run the following commands:

sudo apt-get

-y

update sudo apt-get

install

-y

curl

jq

lz4

Step 2: Install Go

To installGo(opens in a new tab) , run the following commands using the latest version of Go:

Example for AMD64 architecture and Go version 1.22.2

```
wget https://golang.org/dl/go1.22.2.linux-amd64.tar.gz
```

Download the compressed file

```
sudo tar

-C

/usr/local

-xzf

go1.22.2.linux-amd64.tar.gz
```

Extract the file to /usr/local

```
rm go1.22.2.linux-amd64.tar.gz
```

Delete the installer package

Add the Go directory to your systemPATH :

```
echo

'export PATH=PATH:/usr/local/go/bin:HOME/go/bin'

           HOME /.bashrc
```

Write to your .bashrc profile

Step 3: Install Cosmovisor and create data directories

Cosmovisor(opens in a new tab) is a process manager for Cosmos SDK-based blockchains that enables automatic binary updates without downtime. To install the latest version of Cosmovisor, run the following command:

go install

cosmossdk.io/tools/cosmovisor/cmd/cosmovisor@latest To create data directories for Cosmovisor, run the following commands:

mkdir -p HOME /.dydxprotocol/cosmovisor/genesis/bin mkdir -p HOME /.dydxprotocol/cosmovisor/upgrades

Step 4: Download thedydxprotocold

binary

Thedydxprotocold binary contains the software you need to operate a full node.You must use the same version of the software as the network to which you want to connect. To find the current version of thedYdX foundation(opens in a new tab) mainnet, see the recommended protocol version onmintscan.io(opens in a new tab) .

Option 1 : Find and download that protocol binary from thev4 Chain Releases(opens in a new tab) page.

For example, for protocol version 5.0.5 on an AMD system, downloaddydxprotocold-v5.0.5-linux-amd64.tar.gz . Option 2 : Download the binary withcurl , replacing the version numbers and architecture of the package as needed:

curl example for protocol version 5.0.5 on AMD64 architecture

```
curl -L

-O

https://github.com/dydxprotocol/v4-chain/releases/download/protocol/v5. 0.5 /dydxprotocold-v5. 0.5 -linux-amd64.tar.gz
```

Step 5: Movedydxprotocold

to your Cosmovisor/genesis directory

After you download the binary, movingdydxprotocold into your Cosmovisor data directory allows you to use Cosmovisor for no-downtime binary upgrades. To extract, rename, and move the file to your Cosmovisor data directory, run the following commands:

Example for AMD64 architecture

```
sudo tar

-xzvf

dydxprotocold-v5. 0.5 -linux-amd64.tar.gz
```

Extract the file

```
sudo mv

./build/dydxprotocold-v5. 0.5 -linux-amd64

./.dydxprotocol/cosmovisor/genesis/bin/dydxprotocold
```

Move the file to /.dydxprotocol and rename it

```
rm dydxprotocold-v5. 0.5 -linux-amd64.tar.gz
```

Delete the installer package

```
rm -rf

build
```

Delete the now-empty /build directory

Add thedydxprotocold directory to your systemPATH :

```
echo

'export PATH=PATH:HOME/.dydxprotocol/cosmovisor/genesis/bin'

            HOME /.bashrc
```

Write to your .bashrc profile

Step 6: Initialize your node

To initialize your node, provide the ID of the chain to which you want to connect and create a name for your node. The dYdX home directory is created inHOME/.dydxprotocol by default. Replace the example valuesdydx-mainnet-1 andmy-node with your own and run the following command:

Example for DYDX token holders on mainnet

```
dydxprotocold init

--chain-id=dydx-mainnet-1
```

my-node See theNetwork Configuration section of the documentation for chain IDs and other network constants. When you initialize your node,dydxprotocold returns your default node configuration in JSON.

Step 7: Update your node configuration with a list of seed nodes

A seed node acts as an address book and helps your node join the network. To updateconfig.toml with a list of seed nodes, run the following command:

Check theResources(opens in a new tab) page for an up-to-date list of seed nodes for the network to which you want to connect.

Example for DYDX token holders on mainnet

SEED_NODES

```
( "ade4d8bc8cbe014af6ebdf3cb7b1e9ad36f412c0@seeds.polkachu.com:23856" ,
"65b740ee326c9260c30af1f044e9cda63c73f7c1@seeds.kingnodes.net:23856" ,
"d8e106274b24ec64ce724a611def6a3637226745@dydx-mainnet-seed.bwarelabs.com:36656" ,
"20e1000e88125698264454a884812746c2eb4807@seeds.lavenderfive.com:23856" ,
"c2c2fcb5e6e4755e06b83b499aff93e97282f8e8@tenderseed.ccvalidators.com:26401" ,
"a9cae4047d5c34772442322b10ef5600d8e54900@dydx-mainnet-seednode.allthatnode.com:26656" ,
"802607c6db8148b0c68c8a9ec1a86fd3ba606af6@64.227.38.88:26656" ,
"ebc272824924ea1a27ea3183dd0b9ba713494f83@dydx-mainnet-seed.autostake.com:27366" )
```

```
sed -i
```

's/seeds = ""/seeds = """{SEED_NODES[*]}"""/' HOME /.dydxprotocol/config/config.toml The preceding command updates theseeds variable ofconfig.toml with the list you provide.

Step 8: Use a snapshot as your node's initial state

Using snapshots to restore or sync your full node's state saves time and effort. Using a snapshot avoids replaying all the blocks from genesis and does not require multiple binary versions for network upgrades. Instead, your node uses the snapshot as its initial state.

Clear your data directory

If you already have a data directory atHOME/.dydxprotocol/data , you must clear it before installing a snapshot, which comes with its own data directory. To clear your data directory while retaining files you need, follow these steps:

First, make a backup copy ofpriv_validator_state.json in your.dydxprotocol directory by running the following command:

Make a copy of priv_validator_state.json and append .backup

cp HOME /.dydxprotocol/data/priv_validator_state.json HOME /.dydxprotocol/priv_validator_state.json.backup Next, confirm the following:

- A backup file,priv_validator_state.json.backup
- , exists in your current directory.
- The originalpriv_validator_state.json
- exists in the/data
- directory to be deleted.
- No other files exist in the/data
- directory to be deleted.

```
ls HOME /.dydxprotocol
```

Confirm that the backup exists in /.dydxprotocol

```
ls HOME /.dydxprotocol/data
```

Confirm that only priv_validator_state.json exists in /data

Finally, to clear the data directory, removing it and all files inside, run the following command:

WARNING: This command recursively deletes files and directories in the dydxprotocol /data directory. Make sure you know what you are deleting before running the command.

rm -rf HOME /.dydxprotocol/data Installing a snapshot will create a new/data directory.

Install the Snapshot

To download and extract the snapshot contents to the default dydxprotocol home directory, firstchange directories into /.dydxprotocol . To change directories, run the following command:

cd HOME /.dydxprotocol Next, find a provider for your use case on theSnapshot Service(opens in a new tab) page. Use the provider's instructions to download the snapshot into yourHOME/.dydxprotocol directory.

For example, if you are connecting todydx-mainnet-1 , you may use the providePolkachu(opens in a new tab) . In most cases, you can runwget . Next, run the following command in your/HOME/.dydxprotocol directory, replacing the example valueyour-snapshot-filename :

lz4 -dc

<

your-snapshot-filename.tar.lz4

| tar xf

- Extracting the snapshot creates a new/data folder in your current directory,.dydxprotocol .

Next, use the backup filepriv_validator_state.json.backup you created to reinstate/data/priv_validator_state.json with the following command:

mv HOME /.dydxprotocol/priv_validator_state.json.backup HOME /.dydxprotocol/data/priv_validator_state.json Finally,change directories back to your HOME directory for the rest of the procedure . Run the following command:

cd HOME When you start your full node, it will automatically use the snapshot in your data directory to begin syncing your full node's state with the network.

Step 9: Create a system service to start your full node automatically

To create asystemd service that starts your full node automatically, run the following commands:

sudo tee

/etc/systemd/system/dydxprotocold.service

/dev/null

<< EOF [Unit] Description=dydxprotocol node service After=network-online.target

[Service] User=USER ExecStart=HOME/go/bin/cosmovisor run start --non-validating-full-node=true WorkingDirectory=HOME/.dydxprotocol Restart=always RestartSec=5 LimitNOFILE=4096 Environment="DAEMON_HOME=HOME/.dydxprotocol" Environment="DAEMON_NAME=dydxprotocold" Environment="DAEMON_ALLOW_DOWNLOAD_BINARIES=false" Environment="DAEMON_RESTART_AFTER_UPGRADE=true" Environment="UNSAFE_SKIP_BACKUP=true"

[Install] WantedBy=multi-user.target EOF

sudo systemctl

daemon-reload sudo systemctl

enable

dydxprotocold The system service definition above holds environment variables. When you start it, the service will run the commandHOME/go/bin/cosmovisor run start --non-validating-full-node=true .

The flag--non-validating-full-node is required. It disables the functionality intended for validator nodes and enables additional logic for reading data.

Step 10: Start the service

To start your node using thesystemd service that you created, run the following command:

sudo systemctl

start

dydxprotocold When you want to stop the service, run the following command:

sudo systemctl

stop

dydxprotocold When you start your full node it must sync with the history of the network. If you initialized your full node using a snapshot, your node must update its state only with blocks created after the snapshot was taken. If your node's state is empty, it must sync with the entire history of the network.

Check your service logs to confirm that your node is running

sudo journalctl

-u

dydxprotocold

-f If your system servicedydxprotocold is running, the preceding command streams updates from your node to your command line. PressCtrl + C to stop viewing updates.

Finally, confirm that your full node is properly synchronized by comparing its current block to the dYdX Chain:

- To find the network's current block, see theBlock Height
- of your network with a block explorer, such asmintscan.io(opens in a new tab)
- .
- To find your full node's height, query your node with the following command:

curl localhost: 26657 /status When your full node's latest block is the same as the network's latest block, your full node is ready to participate in the network.

Next Steps

When your full node is up to date with the network, you can use it to read live data and configure additional settings. Learn more on theRunning a Full Node page.

Last updated onOctober 15, 2024 Required Node Configs Optimize Your Full Node