

# Genesis Protocol Guide

This is a guide to setting up a network for a group of validators seeking to create a shard (see [Shards in RChain](#)).

## Setup

1. All validators participating in the network launch should have the same version, including git version hash. See [RNode software](#) or [past releases](#)
2. If you have already been running RNode:
  - a. Remove the previous configuration (rnode.toml), if any, as well as the contained storage files to prevent errors caused by previously stored state.
    - i. Linux:
      1. `rm -rf .rnode`
3. To generate your validator key pairs. Run a node in standalone mode using `rnode run -s`

Look in .rnode/genesis folder and you will see: <public key is the name of the file>.sk

```
ec2-user@ip-172-31-38-159 ~]$ cd .rnode/genesis/
[ec2-user@ip-172-31-38-159 genesis]$ ls
2d0cac163e432251a69a4d4bfa1745a3ecd060c096047829b392ad4dec87b3b9.sk
7daa549d7a39d5d701130589f4c5858b441ba037c4ffd58f7a6d155382b5a8af.sk
80f12805b4d3a909979497b90e66659b6c26c0c13c671a3c84d0fdb9a0670431.sk
90f5ffd68cc97b92437901d1501984a111b8879073815561aa7243ba92e01240.sk
bonds.txt
eccde1609792462e7102e684d331226484ec481c0c03a2fe6887545ef944f348.sk
[ec2-user@ip-172-31-38-159 genesis]$
```

Note: private key is the inside the .sk file

4. Ensure that the versions (and githash) are identical across all validators by looking at the logs generated by the node or using the command in a separate terminal window:

```
curl -s localhost:40403/version
```

```
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-38-159 ~]$ curl -s localhost:40403/version
RChain Node 0.7.1 (c3109d3bf326e91bf9bec7248ced8bad51e56d6b)[ec2-user@ip-172-31-38-159 ~]$
```

- Validators supply their chosen public key (filename) generated earlier and paste into a common bonds.txt file. All validators' (including the lead validator) bonds.txt files should have the same content listed inside.



```
ec2-user@ip-172-31-37-146: ~/.rnode/genesis
3743fb8a3b7fd226e41c8b8f1f525ff9407610a35942cc9a9f84b27668eef909 5
7529b69f89c81ee97889ae66ab71ca93273e8f05f5f2034b4a57ba4fa1fccc1b 3
"bonds.txt" 2L, 134C 2,1 All
```

Example:

222a4b2c900fe1a9a597881d46a6271b012eca9059dbf5dd2186a04fe92d7cef 2

- In the same genesis folder, create a wallets.txt file. Inside the wallets file, insert the same public key used in the bonds.txt file and add the following:
  - 0x  
In the beginning of each public key
  - ,<token amount #>,<??#>  
At the end of the public key with **no spaces between them**

Note : Validators should also have identical wallets.txt files.

Example:

0x222a4b2c900fe1a9a597881d46a6271b012eca9059dbf5dd2186a04fe92d7cef,50000,0

## Initiation (Lead Validator Only)

- Kill any instance of Rnode running previously to prevent address bind error. You may have an instance that ran with system startup. You can kill it with `systemctl stop rnode` or `killall java`

2. Startup in standalone node to bootstrap to the network with the following command:.

```
rnode run --standalone --validator-private-key <private-key>
--deploy-timestamp <num> --required-sigs <num> --data_dir
<exclude if using default> --bonds-file path/bonds.txt
--wallets-file path/wallets.txt --duration <time> --interval
<time>
```

Note: it is important to use the private key that has been linked to the public key you have copied into your bonds.txt and wallets.txt file. To obtain your private key, go into the genesis folder and look inside the <public\_key>.sk file you chose earlier and paste it into the syntax listed above.

Example:

```
rnode run --standalone --validator-private-key
<abcdef456788990> --deploy-timestamp 1 --required-sigs 4
--data_dir home/rnode0 --bonds-file path/bonds.txt
--wallets-file path/wallets.txt --duration 10min --interval 10s
```

3. Once your node is launched, provide your bootstrap address, which will display when your node starts up.

## Other Participating Validators

4. All other participating validators connect to the bootstrap node (the bootstrap address here is the node address of the lead validator) and sign the genesis block, if it matches their expectations.

```
rnode run --bootstrap "<node address of lead validator>"
--deploy-timestamp <num> --required-sigs <num> --data_dir
<exclude if using default> --bonds-file path/bonds.txt
--wallets-file path/wallets.txt --genesis-validator
--validator-private-key <key>
```

Note: make sure that all of the participating validators have the same required-sig amount

5. When the minimum number of signatures `--required-sigs <num>` is reached and the `--duration <time>` elapses, the network goes live.
  - a. Success message:

```
[node-io-501] INFO c.r.c.util.comm.CasperPacket - Making a transition to ApprovedBlockRecievedHandler state.
```

***NB: All validators, including the lead validator, MUST have the same bonds.txt, wallets.txt, and timestamp.***

Some flag descriptions:

**required -sigs:** minimum number of validators needed to sign the genesis block

**duration:** Amount of time (in mins) required to get the minimum number of signatures.

**interval:** How often the genesis block is sent to participating validators