Cosmos Hub Parameter-Change Documentation v1.0

This Cosmos Hub educational documentation aims to provide guidelines for creating and assessing parameter-change proposals. There is also documentation here that aims to outline the Hub's parameters, describe their functions, and describe the potential implications of modifying each parameter. Most links within this document are aimed at targets in this Github repo, not within this doc itself.

This documentation has not had adequate review from experts or testing from participants, so please be cautious when using it. Discuss its development here and please provide feedback either in the forum or by opening a Github issue. If you are technically inclined, this is the full list of modules in the Cosmos SDK.

Best Practices

Drafting and submitting a parameter-change governance proposal involves two kinds of risk: losing proposal deposit amounts and the potential to alter the function of the Cosmos Hub network in an undesirable way. The objective of this documentation is to reduce these risks by preparing participants for what to pay attention to and for what information to consider in a proposal. Ideally, a proposal should only fail to pass because the voters 1) are aware and engaged and 2) are able to make an informed decision to vote down the proposal.

If you are considering drafting a community-spend proposal, you should know:

1. How the voting process and governance mechanism works
2. What the community will likely want to know about the proposed change(s)
3. Where and how to engage with the Cosmos community about your proposed change(s)
4. How to prepare your final proposal draft for submission
5. How to submit your proposal to the Cosmos Hub testnet & mainnet

The Voting Process & Governance Mechanism

The proposal has two periods

1. Deposit Period

The deposit period lasts either 14 days or until the proposal deposit totals 512 ATOMs, whichever happens first.

Deposits

Deposit amounts are at risk of being burned. Prior to a governance proposal entering the voting period (ie. for the proposal to be voted upon), there must be at least a minimum number of ATOMs deposited (512). Anyone may contribute to this deposit. Deposits of passed and failed proposals are returned to the contributors.

In the past, different people have considered contributions amounts differently. There is some consensus that this should be a personal choice. There is also some consensus that this can be an opportunity for supporters to signal their support by adding to the deposit amount, so a proposer may choose to leave contribution room (ie. a deposit below 512 ATOMs) so that others may participate. It is important to remember that any contributed ATOMs are at risk of being burned.

Burned deposits

Deposits are burned when proposals:

1. **Expire** - deposits will be burned if the deposit period ends before reaching the minimum deposit (512 ATOM)
2. **Fail to reach quorum** - deposits will be burned for proposals that do not reach quorum ie. 40% of all staked ATOM must vote
3. **Are vetoed** - deposits for proposals with 33.4% of voting power backing the 'no-with-veto' option are also burned

2. Voting Period

The voting period is currently a fixed 14-day period. During the voting period, participants may select a vote of either 'yes', 'no', 'abstain', or 'no-with-veto'. Voters may change their vote at any time before the voting period ends.

What determines whether or not a governance proposal passes?

There are four criteria:

1. A minimum deposit of 512 ATOM is required for the proposal to enter the voting period
   - anyone may contribute to this deposit
   - the deposit must be reached within 14 days (this is the deposit period)
2. A minimum of 40% of the network's voting power (quorum) is required to participate to make the proposal valid
3. A simple majority (greater than 50%) of the participating voting power must back the 'yes' vote during the 14-day voting period
4. Less than 33.4% of participating voting power votes 'no-with-veto'

Currently, the criteria for submitting and passing/failing a parameter-change proposal is the same as the criteria for signaling (text-based) proposals and community-spend proposals.

How is voting tallied?

Voting power is determined by stake weight at the end of the 14-day voting period and is proportional to the number of total ATOMs participating in the vote. Only bonded ATOMs count towards the voting power for a governance proposal.Liquid ATOMs will not count toward a vote or quorum.

Inactive validators can cast a vote, but their voting power (including the backing of their delegators) will not count toward the vote if they are not in the active set when the voting period ends. That means that if I delegate to a validator that is either jailed, tombstoned, or ranked lower than 125 in stake-backing at the time that the voting period ends, my stake-weight will not count in the vote.

Though a simple majority 'yes' vote (ie. 50% of participating voting power) is required for a governance proposal vote to pass, a 'no-with-veto' vote of 33.4% of participating voting power or greater can override this outcome and cause the proposal to fail. This enables a minority group representing greater than 1/3 of voting power to fail a proposal that would otherwise pass.

How is quorum determined?

Voting power, whether backing a vote of 'yes', 'abstain', 'no', or 'no-with-veto' counts toward quorum. Quorum is required for the outcome of a governance proposal vote to be considered valid and for deposit contributors to recover their deposit amounts. If the proposal vote does not reach quorum (ie. less than 40% of the network's voting power participates) within 14 days, any deposit amounts will be burned and the proposal outcome will not be considered to be valid.

Best Practices for Drafting a Parameter-Change Proposal

Engage directly with the voting community and seek feedback

Last updated: Mar 16, 2020

Engagement is likely to be important to the success of this kind of proposal, however, parameter-change proposals will likely be more straightforward than other kinds of proposal. The degree to which you engage with the Cosmos Hub community should be relative to the potential impact that your proposal may have on the stakeholders.

There are many different ways to engage. One strategy involves a few stages of engagement before and after submitting a proposal on chain. In the first stage of this strategy, you should engage with people informally about your idea.

Note: this guide likely fails to capture all ways of engaging. Perhaps you could bring your idea to a podcast. You could host an AMA on Reddit or host a Q&A (questions & answers) video call. Try to go above and beyond what's recommended here--experiment, and use your strengths.

Stage 1: Your Idea

Not yet confident about your idea?

Great! Parameter-change proposals will likely impact many stakeholders. Introduce your idea with known members of the community before investing resources into drafting a proposal. Don't let negative feedback dissuade you from exploring your idea if you think that it's still important.

If you know people who are very involved with the Cosmos Hub, send them a private message with a concise overview of what you think will result from your proposed changes. Wait for them to ask questions before providing details. Do the same in semi-private channels where people tend to be respectful (and hopefully supportive).

I recommend this Cosmos Discord community and the private Cosmos Network VIP Telegram channel (ask for an invite on the forum if you are or would like to be a Cosmos contributor).

Confident with your idea?

Great! However, remember that parameter-change proposals likely impact many stakeholders, which can happen in unexpected ways. Introduce your proposed changes to members of the community before investing resources into drafting a proposal. At this point you should seek out and carefully consider critical feedback in order to protect yourself from confirmation bias. This is the ideal time to see a critical flaw, because submitting a flawed proposal will waste resources and it could possibly cause confusion and initiate social rifts.

Are you ready to draft a governance proposal?

If you've considered feedback from broad perspectives and think that the changes you have proposed are valuable, and you believe that others think this way as well, it's likely worth drafting a proposal. However, remember that the largest ATOM stakers have the biggest vote, so a vocal minority isn't necessarily representative or predictive of the outcome of an on-chain vote.

A conservative approach is to have some confidence that you roughly have enough initial support from a majority of the voting power before proceeding to drafting your proposal. However, there are likely other approaches, and if your idea is important enough, you may want to pursue it regardless of whether or not you are confident that the voting power will support it.

Stage 2: Your Draft Proposal

Begin with a well-considered draft proposal

The next major section outlines and describes some potential elements of a parameter-change proposal. Ensure that you have considered your proposal and anticipated questions that the community will likely ask. Once your proposal is on-chain, you will not be able to change it.

Engage the community with your draft proposal

1. Post a draft of your proposal as a topic in the 'governance' category of the Cosmos forum.
2. Directly engage key members of the community for feedback. These could be large contributors, those likely to be most impacted by the proposal, and entities with high stake-backing (eg. high-ranked validators; large stakers).
3. Engage with the Cosmos Governance Working Group (GWG). These are people focused on Cosmos governance--they won't write your proposal, but will provide feedback and recommend resources to support your work. Members can be contacted on the forum (they use the tag 'GWG' in posts), in Telegram, and on Discord.
4. Target members of the community in a semi-public way before bringing the draft to a full public audience. The burden of public scrutiny in a semi-anonymized environment (eg. Twitter) can be stressful and overwhelming without establishing support. Solicit opinions in places with people who have established reputations first. For example, there is a private Telegram group called Cosmos Network VIP (ask for an invite on the forum if you are or would like to be a Cosmos contributor). Let people in the Discord community know about your draft proposal.
5. Alert the entire community to the draft proposal via
   - Twitter, tagging accounts such as the All in Bits Cosmos account, the Cosmos GWG, and Today in Cosmos @adriana_kalpa
   - Telegram, Adriana (All in Bits)
   - Discord

Stage 3: Your On-Chain Proposal

A majority of the voting community should probably be aware of the proposal and have considered it before the proposal goes live on chain. If you're taking a conservative approach, you should have reasonable confidence that your proposal will pass before risking deposit contributions. Make revisions to your draft proposal after each stage of engagement.

Submit your proposal to the testnet

You may want to submit your proposal to the testnet chain before the mainnet for a number of reasons, such as wanting to see what the proposal description will look like, to share what the proposal will look like in advance with stakeholders, and to signal that your proposal is about to go live on the mainnet. Perhaps most importantly, you can test the parameter changes in advance (if you have enough support from the voting power on the testnet).

Submitting your proposal to the testnet increases the likelihood of engagement and the possibility that you will be alerted to a flaw before deploying your proposal to mainnet.

The Deposit Period

The deposit period currently lasts 14 days. If you submitted your transaction with the minimum deposit (512 ATOM), your proposal will immediately enter the voting period. If you didn't submit the minimum deposit amount (currently 512 ATOM), then this may be an opportunity for others to show their support by contributing (and risking) their ATOMs as a bond for your proposal. You can request contributions openly and also contact stakeholders directly (particularly stakeholders who are enthusiastic about your proposal). Remember that each contributor is risking their funds, and you can read more about the conditions for burning deposits here.

This is a stage where proposals may begin to get broader attention. Most popular explorers currently display proposals that are in the deposit period, but due to proposal spamming, this may change. Hubble, for example, only displays proposals that have 10% or more of the minimum deposit, so 51.2 ATOM or more.

A large cross-section of the blockchain/cryptocurrency community exists on Twitter. Having your proposal in the deposit period is a good time to engage the so-called 'crypto Twitter' Cosmos community to prepare validators to vote (eg. tag @cosmosvalidator) and ATOM-holders that are staking (eg. tag @cosmos, @adriana_kalpa).

The Voting Period

At this point you'll want to track which validator has voted and which has not. You'll want to re-engage directly with top stake-holders, ie. the highest-ranking validator operators, to ensure that:

1. they are aware of your proposal;
2. they can ask you any questions about your proposal; and
3. they are prepared to vote.

Remember that any voter may change their vote at any time before the voting period ends. That historically doesn't happen often, but there may be an opportunity to convince a voter to change their vote. The biggest risk is that stakeholders won't vote at all (for a number of reasons). Validator operators tend to need multiple reminders to vote. How you choose to contact validator operators, how often, and what you say is up to you--remember that no validator is obligated to vote, and that operators are likely occupied by competing demands for their attention. Take care not to stress any potential relationship with validator operators.

Elements of a Parameter-Change Proposal

It will be important to balance two things: being detailed and being concise. You'll want to be concise so that people can assess your proposal quickly. You'll want to be detailed so that voters will have a clear, meaningful understanding of what the changes are and how they are likely to be impacted. These are some elements that the Cosmos Hub community may be likely to be looking for:

1. Summary - the key details of the proposal: parameter(s) being changed; reasoning for the changes; potential impacts to stakeholders
    - assume that most people will not read beyond this section
    - try to describe what you are proposing here as simply and concisely as possible
2. Problem/Value - generally the problem or value that's motivating the parameter change(s)
3. Solution - generally how changing the parameter(s) will address the problem or improve the network
    - the beneficiaries of the change(s) (ie. who will these changes impact and how?)
        - voters should understand the importance of the change(s) in a simple way
4. Risks & Benefits - clearly describe how making this/these change(s) may expose stakeholders to new benefits and/or risks
5. Supplementary materials - optional materials eg. models, graphs, tables, research, signed petition, etc

Submitting a Parameter-Change Proposal

WARNING: This process has not been thoroughly tested. Consider discussing this process with the Cosmos governance working group (GWG) before using it to submit a proposal.

If you have a final draft of your proposal ready to submit, you may want to push your proposal live on the testnet first. These are the three primary steps to getting your parameter-change proposal live on-chain.

1. (**Optional**) Hosting supplementary materials for your parameter-change proposal with IPFS (InterPlanetary File System)
2. Formatting the JSON file for the governance proposal transaction that will be on-chain
3. Sending the transaction that submits your governance proposal on-chain

Hosting supplementary materials

If you think that the voting community will need more details (eg. modelling, research, etc) about the proposed parameter change(s), draft a document and convert it to a PDF file. Upload the PDF to the IPFS network:

1. either by running an IPFS node and the IPFS software, or
2. using a service such as https://pinata.cloud

Ensure that you "pin" the PDF file so that it continues to be available on the network. You should get a URL like this: https://ipfs.io/ipfs/QmSMGEoY2dfxADPfgoAsJxjjC6hwpSNx1dXAqePiCEMCbY

Share the URL with others and verify that your file is publicly accessible.

The reason we use IPFS is that it is a decentralized means of storage, making it resistant to censorship or single points of failure. This increases the likelihood that the file will remain available in the future.

Formatting the JSON file for the governance proposal

Prior to sending the transaction that submits your proposal on-chain, you must create a JSON file. This file will contain the information that will be stored on-chain as the governance proposal. Begin by creating a new text (.txt) file to enter this information. Use these best practices as a guide for the contents of your proposal. When you're done, save the file as a .json file. See the examples that follow to help format your proposal.

Note: Changes to the `gov` module are different from the other kinds of parameter changes because `gov` has subkeys, as discussed here. Only the `key` part of the JSON file is different for `gov` parameter-change proposals.

For parameter-change proposals, there are seven (7) components:

1. Title - the distinguishing name of the proposal, typically the way the that explorers list proposals
2. Description - the body of the proposal that further describes what is being proposed and details surrounding the proposal
3. Subspace - the Cosmos Hub module with the parameter that is being changed
4. Key - the parameter that will be changed
5. Value - the value of the parameter that will be changed by the governance mechanism
6. Denom - `uatom` (micro-ATOM) will be the type of asset used as the deposit
7. Amount - the amount that will be contributed to the deposit (in micro-ATOMs "uatom") from the account submitting the proposal

Once on-chain, most people will rely upon network explorers to interpret this information with a graphical user interface (GUI).

Note: In future, this formatting may be changed to be more standardized with the other types of governance proposals.

Examples

In this simple example (below), a network explorer will list the governance proposal by its title: "Increase the minimum deposit amount for governance proposals." When a user selects the proposal, they'll see the proposal’s description. A nearly identical proposal can be found on the gaia-13007 testnet here.

Not all explorers will show the proposed parameter changes that are coded into the proposal, so ensure that you verify that the description aligns with what the governance proposal is programmed to enact. If the description says that a certain parameter will be increased, it should also be programmed to do that, but it's possible that that's not the case (accidentally or otherwise).

You can query the proposal details with the gaiacli command-line interface using this command: `gaiacli q gov proposal 30 --chain-id gaia-13007 --node 45.77.218.219:26657`

You use can also use Hubble or gaiacli to query the transaction that I sent to create a similar proposal on-chain in full detail: `gaiacli q tx B5AB56719ADB7117445F6E191E1FCE775135832AFE6C9922B8703AADBC4B13F3 --chain-id gaia-13007 --node 45.77.218.219:26657`

Testnet Example: changing a parameter from the `gov` module

```
{
  "title": "Increase the minimum deposit amount for governance proposals",
  "description": "If successful, this parameter-change governance proposal that will change the minimum deposit from 0.1 to 0.2 testnet ATOMs.",
  "changes": [
    {
      "subspace": "gov",
      "key": "depositparams",
      "value": {"mindeposit":"200000umuon"}
    }
  ],
  "deposit": [
    {
      "denom": "umuon",
      "amount": "100000"
    }
  ]
}
```

The deposit `denom` is `uatom` and `amount` is `100000`. Since 1,000,000 micro-ATOM is equal to 1 ATOM, a deposit of 0.1 ATOM will be included with this proposal. The gaia-13007 testnet currently has a 0.1 ATOM minimum deposit, so this will put the proposal directly into the voting period. There is a minimum deposit required for a proposal to enter the voting period, and anyone may contribute to this deposit within a 14-day period. If the minimum deposit isn't reached before this time, the deposit amounts will be burned. Deposit amounts will also be burned if quorum isn't met in the vote or if the proposal is vetoed.

Mainnet example:

To date, the Cosmos Hub's parameters have not been changed by a parameter-change governance proposal. This is a hypothetical example of the JSON file that would be used with a command line transaction to create a new proposal. This is an example of a proposal that changes two parameters, and both parameters are from the `slashing` module. A single parameter-change governance proposal can reportedly change any number of parameters.

```
{
  "title": "Parameter changes for validator downtime",
  "description": "If passed, this governance proposal will do two things:\n\n1.
Increase the slashing penalty for downtime from 0.01% to 0.50%\n2. Decrease the
window \n\nIf this proposal passes, validators must sign at least 5% of 5,000
blocks, which is 250 blocks. That means that a validator that misses 4,750
consecutive blocks will be considered by the system to have committed a
liveness violation, where previously 9,500 consecutive blocks would need to
have been missed to violate these system rules. Assuming 7s block times,
validators offline for approximately 9.25 consecutive hours (instead of ~18.5
hours) will be slashed 0.5% (instead of 0.01%).",
  "changes": [
    {
      "subspace": "slashing",
      "key": "SlashFractionDowntime",
      "value": 0.005000000000000000
    }
{
      "subspace": "slashing",
      "key": "SignedBlocksWindow",
      "value": 5000
    }
  ],
  "deposit": [
    {
      "denom": "uatom",
      "amount": "512000000"
    }
  ]
}
```

Note: in the JSON file, `\n` creates a new line.

It's worth noting that this example proposal doesn't provide reasoning/justification for these changes. Consider consulting the parameter-change best practices documentation for guidance on the contents of a parameter-change proposal.

Sending the transaction that submits your governance proposal

This is the command format for using gaiacli (the command-line interface) to submit your proposal on-chain: `gaiacli tx gov submit-proposal param-change <proposal.json> --from [key/address]`

This is the complete command that I could use to submit a testnet parameter-change proposal right now: `gaiacli tx gov submit-proposal param-change param.json --from gavin --chain-id gaia-13007 --node 45.77.218.219:26657`

This is the complete command that I could use to submit a mainnet parameter-change proposal right now: `gaiacli tx gov submit-proposal param-change param.json --from gavin --gas 500000 --fees 7500uatom --chain-id cosmoshub-3 --node cosmos-node-1.figment.network:26657`

1. `gaiacli` is the command-line interface client that is used to send transactions and query the Cosmos Hub
2. `tx gov submit-proposal param-change` indicates that the transaction is submitting a parameter-change proposal
3. `--from gavin` is the account key that pays the transaction fee and deposit amount
4. `--gas 500000` is the maximum amount of gas permitted to be used to process the transaction
   - the more content there is in the description of your proposal, the more gas your transaction will consume
   - if this number isn't high enough and there isn't enough gas to process your transaction, the transaction will fail
   - the transaction will only use the amount of gas needed to process the transaction
5. `--fees` is a flat-rate incentive for a validator to process your transaction
   - the network still accepts zero fees, but many nodes will not transmit your transaction to the network without a minimum fee

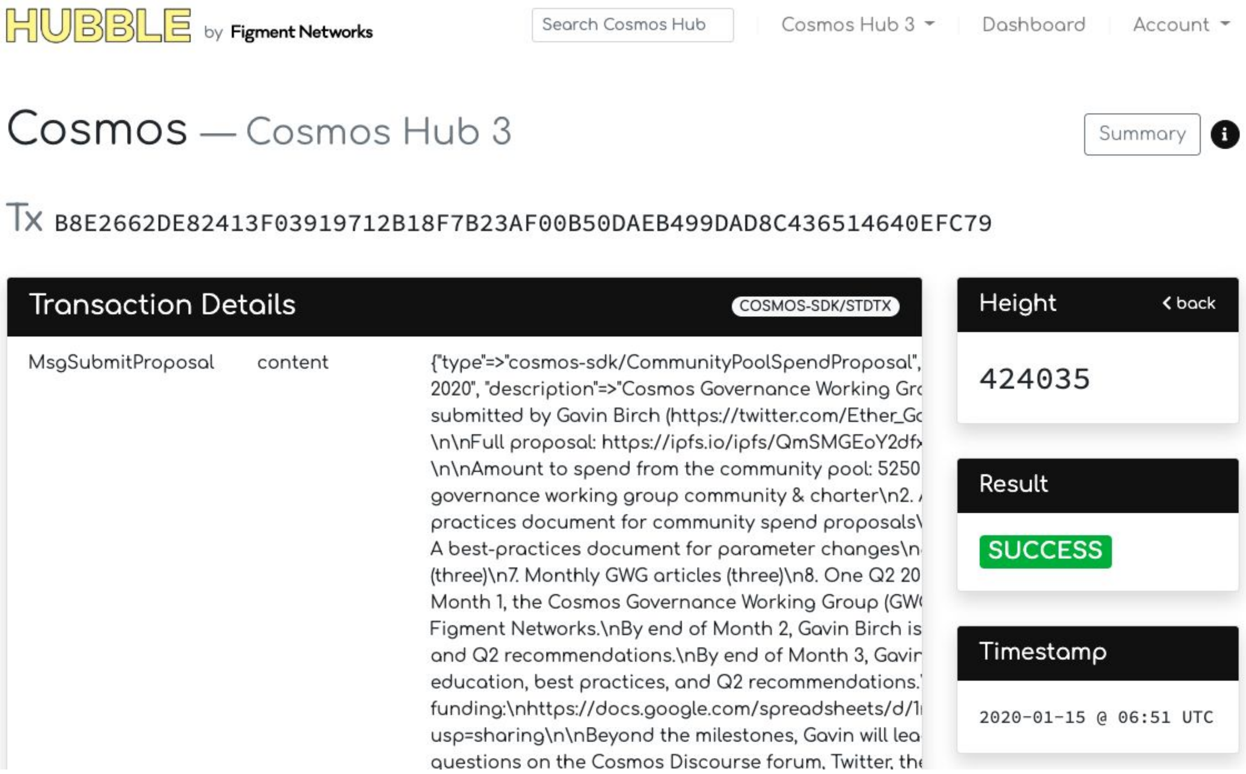
    - many nodes (including the Figment node) use a minimum fee to disincentivize transaction spamming
    - 7500uatom is equal to 0.0075 ATOM
6. `--chain-id cosmoshub-3` is Cosmos Hub 3
    - the testnet chain ID is gaia-13007
7. `--node cosmos-node-1.figment.network:26657` is using Figment Networks' node to send the transaction to the Cosmos Hub 3 network

Note: be careful what you use for `--fees`. A mistake here could result in spending hundreds or thousands of ATOMs accidentally, which cannot be recovered.

Verifying your transaction

After posting your transaction, your command line interface (gaiacli) will provide you with the transaction's hash, which you can either query using gaiacli or by searching the hash using Hubble. The hash should look like this:
`B8E2662DE82413F03919712B18F7B23AF00B50DAEB499DAD8C436514640EFC79`

You can see whether or not your transaction was successful with Hubble:



Cosmos — Cosmos Hub 3

Tx B8E2662DE82413F03919712B18F7B23AF00B50DAEB499DAD8C436514640EFC79

Transaction Details COSMOS-SDK/STDTX

MsgSubmitProposal content {"type"=>"cosmos-sdk/CommunityPoolSpendProposal",
2020", "description"=>"Cosmos Governance Working Gr
submitted by Gavin Birch (https://twitter.com/Ether_G
\n\nFull proposal: https://ipfs.io/ipfs/QmSMGEoY2df
\n\nAmount to spend from the community pool: 5250
governance working group community & charter\n2.
practices document for community spend proposals
A best-practices document for parameter changes\n
(three)\n7. Monthly GWG articles (three)\n8. One Q2 20
Month 1, the Cosmos Governance Working Group (GW
Figment Networks.\nBy end of Month 2, Gavin Birch is
and Q2 recommendations.\nBy end of Month 3, Gavi
education, best practices, and Q2 recommendations.
funding:\nhttps://docs.google.com/spreadsheets/d/1
usp=sharing\n\nBeyond the milestones, Gavin will le
questions on the Cosmos Discourse forum, Twitter, th

Height 424035

Result SUCCESS

Timestamp 2020-01-15 @ 06:51 UTC

Troubleshooting a failed transaction

There are a number of reasons why a transaction may fail. Here are two examples:

1. **Running out of gas** - The more data there is in a transaction, the more gas it will need to be processed. If you don't specify enough gas, the transaction will fail.
2. **Incorrect denomination** - You may have specified an amount in 'utom' or 'atom' instead of 'uatom', causing the transaction to fail.

If you encounter a problem, try to troubleshoot it first, and then ask for help on the All in Bits Cosmos forum: https://forum.cosmos.network/c/governance. We can learn from failed attempts and use them to improve upon this guide.

Submitting your proposal to the testnet

You may want to submit your proposal to the testnet chain before the mainnet for a number of reasons:

1. To see what the proposal description will look like
2. To signal that your proposal is about to go live on the mainnet
3. To share what the proposal will look like in advance with stakeholders
4. To test the functionality of the governance features

Submitting your proposal to the testnet increases the likelihood that you will discover a flaw before deploying your proposal on mainnet. A few things to keep in mind:

- you'll need testnet tokens for your proposal (ask around for a faucet)
- the parameters for testnet proposals are different (eg. voting period timing, deposit amount, deposit denomination)
- the deposit denomination is in 'muon' instead of 'uatom'

Modules Wiki

There are currently 8 modules active in the Cosmos Hub with parameters that may be altered via governance proposal:

1. auth - Authentication of accounts and transactions
2. bank - Token transfer functionalities
3. gov - On-chain governance proposals and voting
4. staking - Proof-of-stake layer
5. slashing - Validator punishment mechanisms
6. distribution - Fee distribution and staking token provision distribution
7. crisis - Halting the blockchain under certain circumstances (ie. if an invariant is broken)
8. mint - Creation of new units of staking token

There is an index of these parameters here. The value or setting for each parameter may be verified in the chain's genesis file, found here. These are the parameter settings that the latest Cosmos Hub chain launched with, and will remain so unless a governance proposal or software upgrade changes them.

There are also ways to query the current settings for each module's parameter(s). Some can be queried with the command line program `gaiacli`, but I'm still exploring the ways that these settings can be queried. Want to help? I've opened this up as an issue here. You can begin by using the command `gaia q [module] -h` to get help about the subcommands for the module you want to query. For example, `gaiacli q staking params --chain-id cosmoshub-3 --node cosmos-node-1.figment.network:26657` returns the settings of four parameters:

```
unbonding_time: 504h0m0s
max_validators: 125
max_entries: 7
bond_denom: uatom
```

Note

- You cannot currently query the `bank` module's parameter, which is `sendenabled`. You also cannot query the `crisis` module's parameters.
- You will need to compile `gaiacli` from source into a binary file executable by your operating system eg. MacOS, Windows, Linux

- You will need to indicate which chain you are querying, and currently this is `--chain-id cosmoshub-3`
- You will need to connect to a full node. If gaiacli isn't already configured for this, you can use this tag in your command `--node [address]:26657`.

Full nodes

Running a full node can be difficult for those not technically-inclined, so you may choose to use a third-party's full node. In this case, the primary security risk is that of censorship: it's the single place where you have a single gateway to the network, and any messages submitted through an untrusted node could be censored.

- cosmos-node-1.figment.network:26657 (Figment Networks)
- 63.35.133.166:26657 (Chorus One)
- 18.217.97.195:26657 (Melea Trust)

Contributors

This documentation was created by Gavin Birch (Figment Networks). Its development was supported by community funding that was approved on January 29, 2020 by the Cosmos Hub via community-spend proposal Prop23. You can read the full proposal PDF here. You can also create an issue or pull request to participate in its development at any time!

Special thanks to the following for helping to provide credible information that contributed to this wiki's development:

- Aleks (All in Bits; Fission Labs) for answering countless questions about these parameters
- Alessio (All in Bits) for explaining how `SigVerifyCostED25519` & `SigVerifyCostSecp256k1` work, and detailed answers to my many questions
- Vidor for volunteering to explain `ConstantFee` and answering my many questions in detail
- Hyung (B-Harvest) for volunteering how `InflationRateChange` works
- Joe (Chorus One) for explaining the security details involved with using full nodes for transactions
- Sunny (All in Bits; Sikka) for volunteering an explanation of the purpose of `withdrawaddrenabled`

Appendix

Index of Governable Parameters

The `auth` Module

The `auth` module is responsible for authenticating accounts and transactions.

1. `MaxMemoCharacters` - 512
2. `TxSigLimit` - 7
3. `TxSizeCostPerByte` - 10
4. `SigVerifyCostED25519` - 590
5. `SigVerifyCostSecp256k1` - 1000

The `bank` Module

The `bank` module is responsible for token transfer functionalities.

1. `sendenabled`

The `gov` Module

The `gov` module is responsible for on-chain governance proposals and voting functionality. Note that this module has requires a unique way to change its parameters.

1. `depositparams`
   - `mindeposit` - `512000000 uatom` (micro-ATOMs)
   - `maxdepositperiod` - `1209600000000000` (nanoseconds)
2. `votingparams`
   - `votingperiod` - `1209600000000000` (nanoseconds)
3. `tallyparams`
   - `quorum` - `0.400000000000000000` (proportion of network)
   - `threshold` - `0.500000000000000000` (proportion of voting power)

    - `veto` - `0.334000000000000000` (proportion of voting power)

The `staking` Module

The `staking` module is responsible for the proof of stake (PoS) layer of the Cosmos Hub blockchain.

1. `UnbondingTime` - 1814400000000000 (nanoseconds)
2. `MaxValidators` - 125
3. `KeyMaxEntries` - 7
4. `BondDenom` - uatom (micro-ATOM)

The `slashing` Module

The `slashing` module is responsible for enabling the Cosmos Hub to penalize any validator for an attributable violation of protocol rules by slashing (ie. partially destroying) the bonded ATOMs of their stake-backing. Penalties may include a) burning some amount of a staked bond and b) removing the ability to vote on future blocks and governance proposals for a period of time.

1. `SignedBlocksWindow` - 10000 (blocks)
2. `MinSignedPerWindow` - 0.050000000000000000 (proportion)
3. `DowntimeJailDuration` - 600000000000 (nanoseconds)
4. `SlashFractionDoubleSign` - 0.050000000000000000 (proportion)
5. `SlashFractionDowntime` - 0.000100000000000000 (proportion)

The `distribution` Module

The `distribution` module is responsible for distributing staking rewards between validators, delegators, and the Community Pool.

1. `communitytax` - 0.020000000000000000 (proportion)
2. `baseproposerreward` - 0.010000000000000000 (proportion)
3. `bonusproposerreward` - 0.040000000000000000 (proportion)
4. `withdrawaddrenabled` - true

The `crisis` Module

The `crisis` module is responsible for halting the Cosmos Hub if an invariant is broken.

1. `ConstantFee` - 1333000000uatom (micro-ATOM)

The `mint` Module

The `mint` module is responsible for enabling the Cosmos Hub to have a flexible inflation rate that depends upon a bonded stake ratio target (`GoalBonded`).

1. `MintDenom` - uatom (micro-ATOM)
2. `InflationRateChange` - 0.130000000000000000 (proportion)
3. `InflationMax` - 0.200000000000000000 (proportion)
4. `InflationMin` - 0.070000000000000000 (proportion)
5. `GoalBonded` - 0.670000000000000000 (proportion)
6. `BlocksPerYear` - 4855015 (blocks)