
Mosaic
Galaxy
Mosaic
Explorer Staking
Guide
ENG

Mosaic Explorer Staking (Delegation)

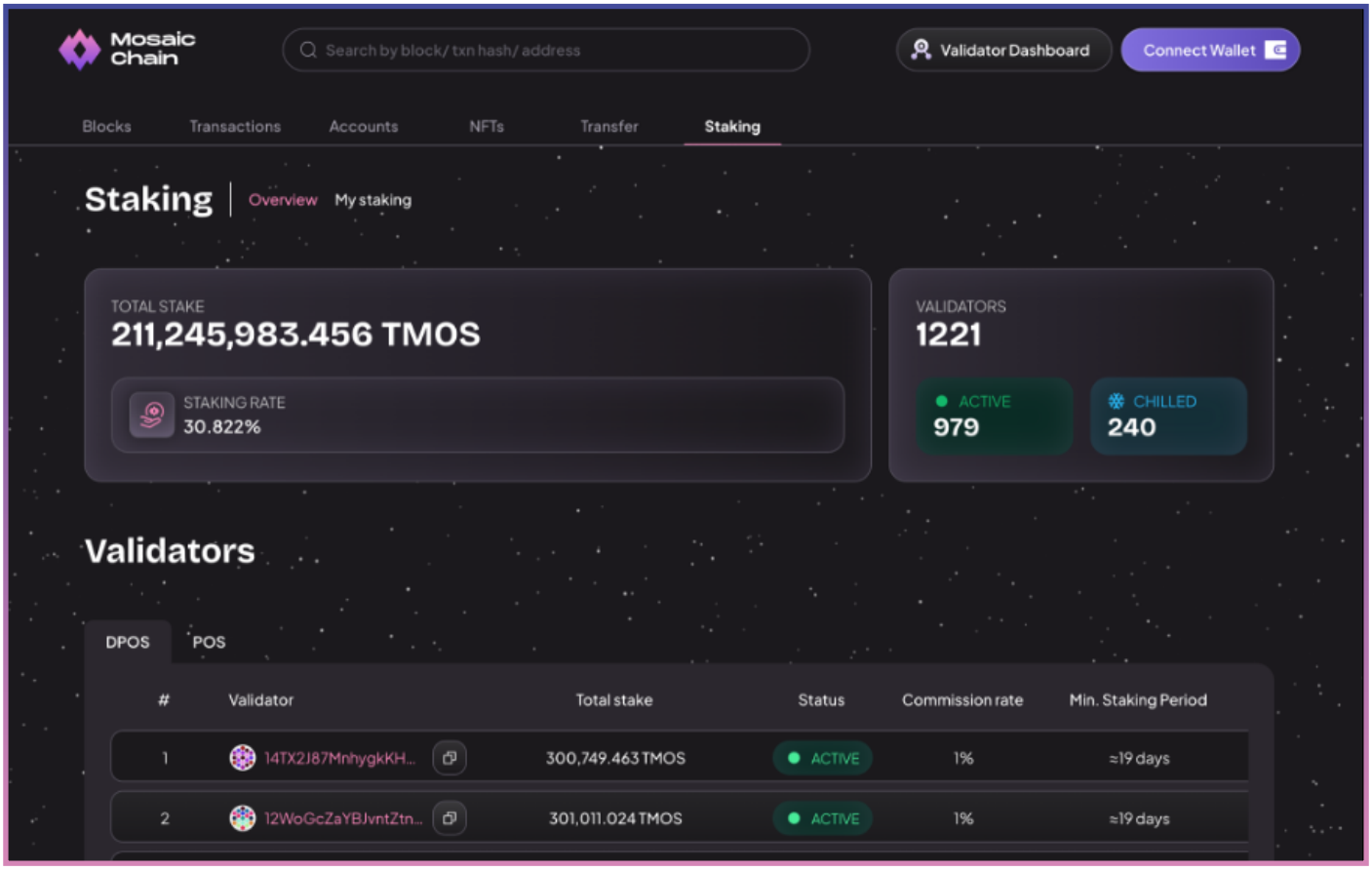
Glossary

English term	Meaning
staking	Staking tokens (including NFT) for network security and rewards.
stake	The amount of tokens committed.
validator	A node that produces and validates blocks.
delegator	A user who binds their tokens to a validator.
reward	Rewards for validators and their delegators.
commission	The validator's share of the rewards.
slashing	A bet deducted due to malicious or malfunctioning activity.
unstaking	The process of unstaking (often with a waiting period).
session	The time unit for staking rewards and calculation periods.
minimum stake / min. staking amount	The minimum amount that must be committed to participate.
minimum staking period	The time that the token must be staked before it can be unlocked.
contract	It contains the terms of the staking agreement between the validator and the delegator (or the validator and itself).

Staking page on Mosaic Explorer

devnet-explorer.mosaicchain.io/staking

The staking page consists of two main sections: Overview and the user's My Staking, with a selector at the top of the page allowing you to switch between the two subpages.



Staking overview

At the top of the page you will see global staking statistics:
- Total stake: the total value of assets staked on the Mosaic blockchain.
- Staking rate: the ratio of staked tokens to total issued tokens.
- Validators: The number of validators on the Mosaic blockchain, broken down by active and chilled status.

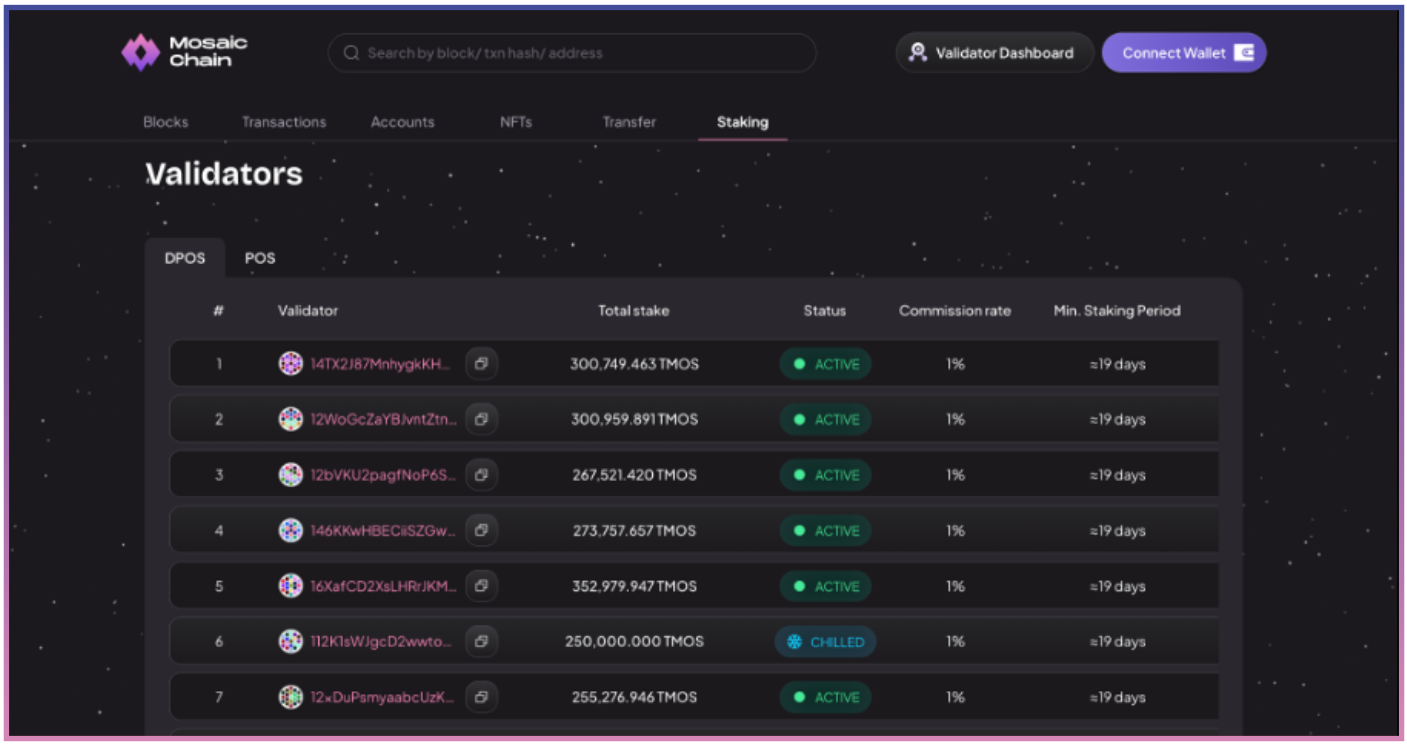
Below this is the list of Validators, with DPOS and POS validators in a separate table, as staking is only possible for DPOS validators.

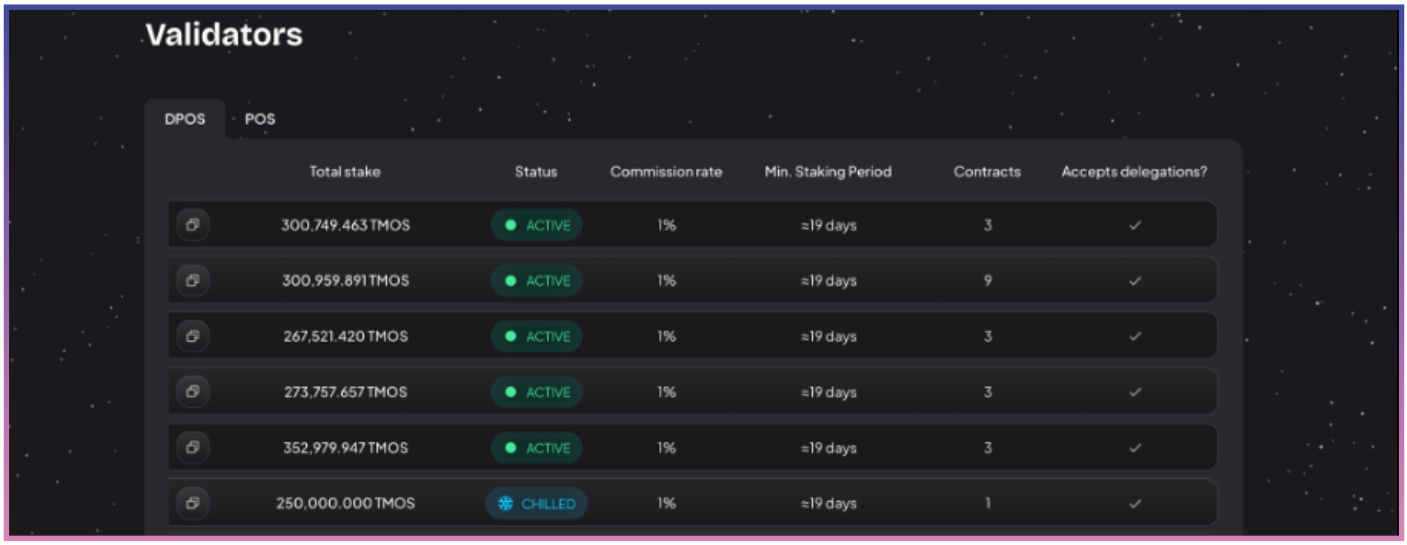
Validators
In the list of DPOS validators you will see the following information (the table can be scrolled horizontally, not all columns are visible at once):

- #: Sequence number. This helps the table to be readable. Currently, validators are listed in chronological order in the table.

- Validator: The wallet address of the validator, clicking on this will navigate you to the “Validator details” page.
- Total stake: The validator's total stake, including the value of their own NFT, the NFTs delegated to them, and the rewards.
- Status: Active, faulted or chilled.
- Commission rate: The rate that the validator receives from the delegator's reward after staking with them.
- Min. Staking Period: minimum staking period. The default value is 672 sessions, which is approximately 19 days based on the average session length. The validator can set this to a higher value.
- Contracts: The number of validator staking contracts, including those for the validator's own NFT.
- Accepts delegations: Whether delegation to the validator is possible. Validators can set themselves not to accept stake from a delegator for a period of time.

The minimum stake is currently 50 TMOS for all validators.

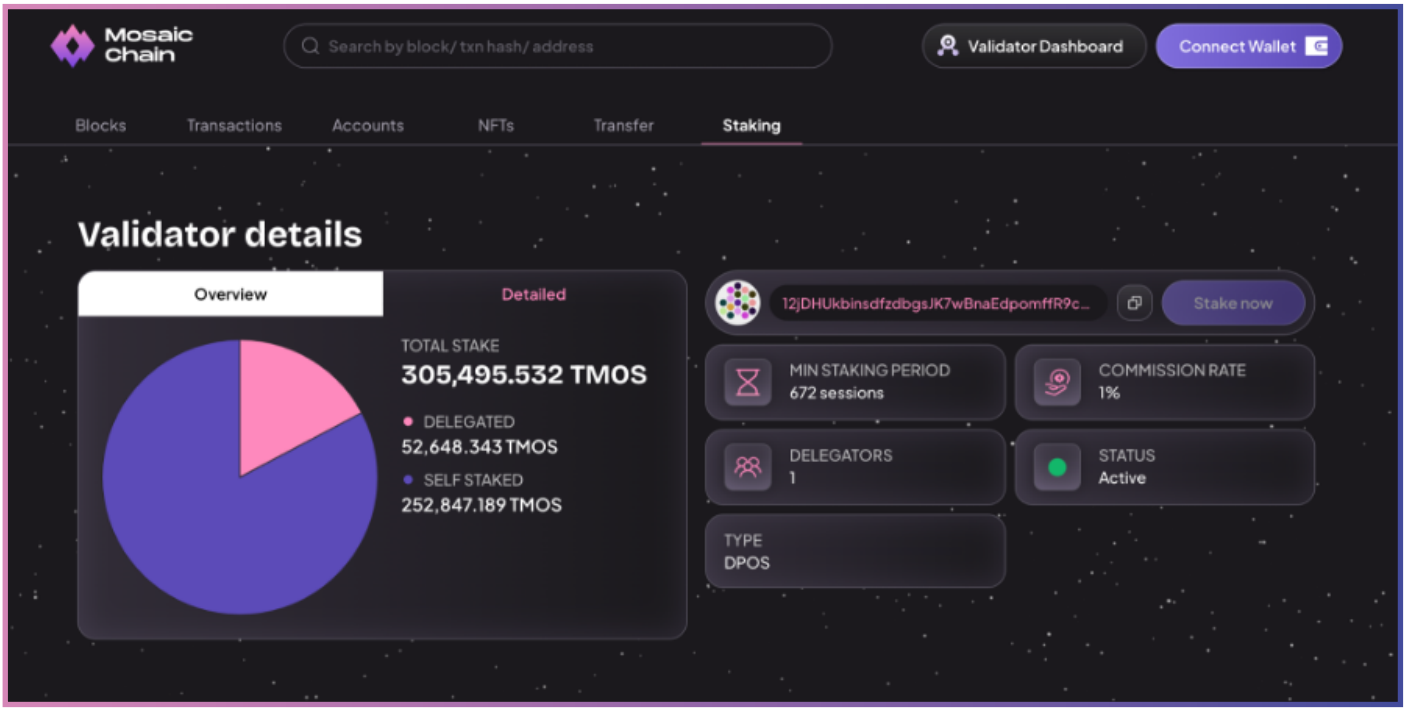




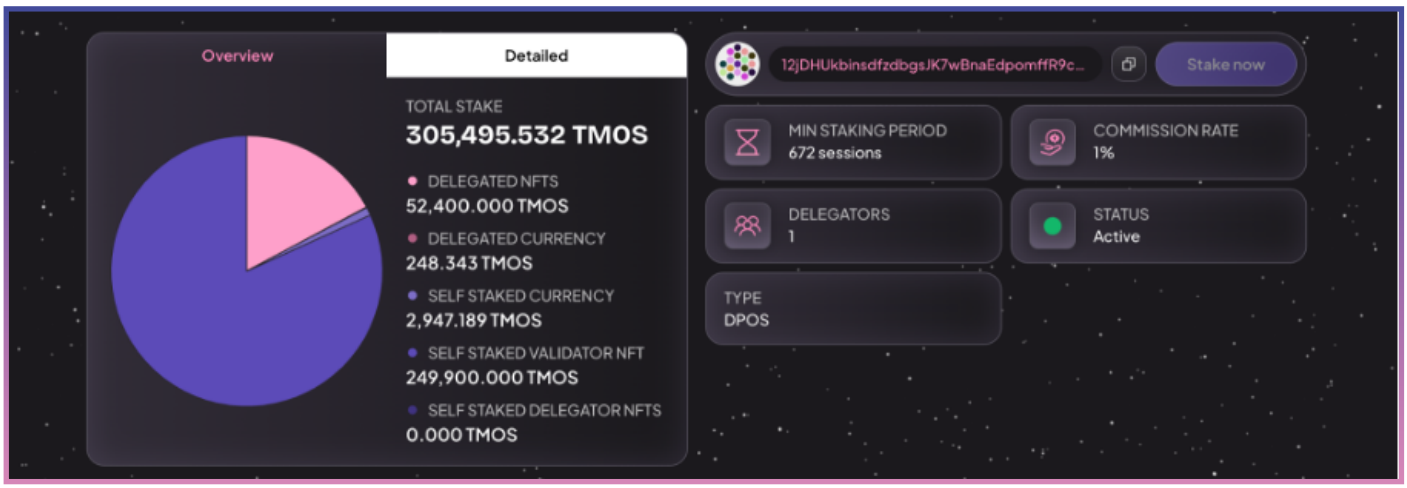
Select a validator from the table, click on its wallet address and view its details on the Validator Details page that opens.

Validator Details

On this page, on the right side, you see the min. staking period, the commission rate and the status, however, here instead of contracts we see the number of delegators, so your own validator contract is not included in this number.
(Validators can manage their own staking contract terms, such as the min. staking period and commission rate, on the Validator Dashboard.)



- The pie chart shows the breakdown of the validator's total stake. The Overview view shows the sum of the validator's own stake and the stake delegated by others. The Detailed view shows this broken down further:
- delegated NFTs: the nominal value of the delegator NFTs delegated to the validator
- delegated currency: the amount of TMOS delegated to the validator
- self staked currency: the amount of TMOS staked by the validator to itself, including
- rewards
- self staked validator NFT: the nominal value of the validator's bound validator NFTs
- self staked delegator NFTs: the nominal value of the delegator NFTs delegated by the validator to itself



If you like the details of the validator and would like to stake it, you can do so by clicking the Stake now button.
If your wallet is not yet connected to the site, click the Connect wallet button in the upper right corner and connect your wallet. (For the wallet connection process, see
at the end of the document.) Select the wallet address you would like to stake with, which
has your delegate NFT.
After connecting your wallet, click the “Stake now” button.

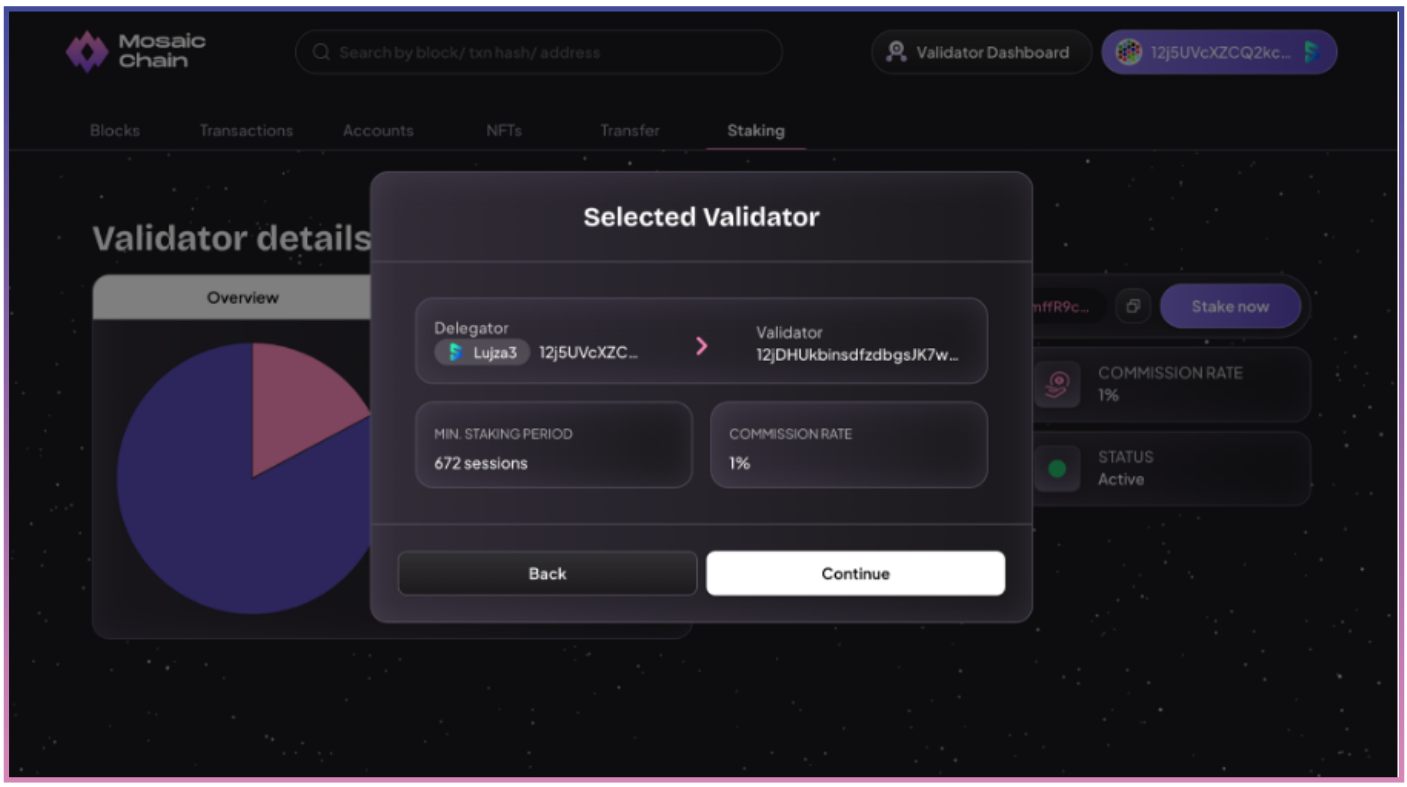
Staking process

Important information

What you stake will be tied up for at least the minimum staking period. (Unless a validator has been in a chill status for at least 72 sessions, in which case an “extraordinary” unstaking is possible.)
The delegator NFT expiration period starts from the date of its first staking. If you unstake and it is not
staked for a certain period, the expiration period will continue.
Ensure that you have a minimum amount in your balance to cover the transaction fees for staking and unstaking.
The reward will be paid out at the end of the session and added to your stake,
you cannot withdraw it from the staking during the minimum staking period.
Monitor your stake and change validators if necessary, as circumstances may change.
Delegator NFT can be staked if
- has not yet been staked to another validator, i.e. its status is not bound,
- its nominal value is greater than or equal to the minimum stake,
- it does not expire before the end of the minimum staking period.

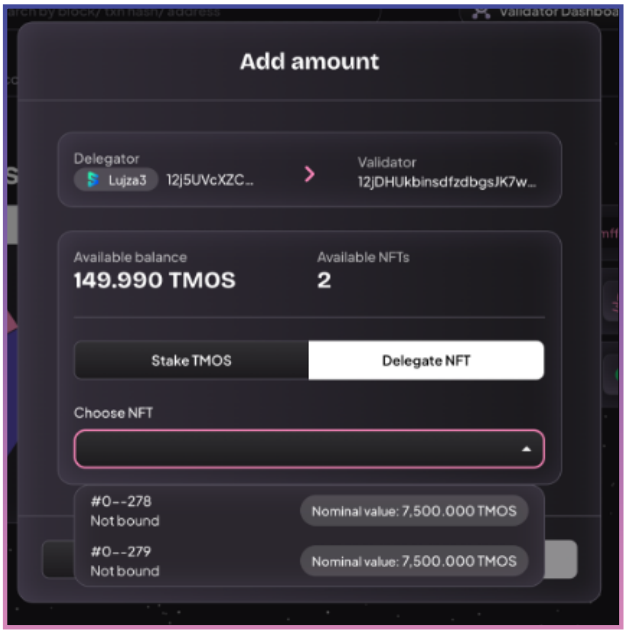
After clicking the “Stake now” button on the validator page, you will need to follow the steps below.

1. Selected Validator:
This is a confirmation window, you will see your delegating wallet on the left, the wallet address of the selected validator on the right, as well as the validator's minimum staking period and commission rate. If you are satisfied, click the Continue button.



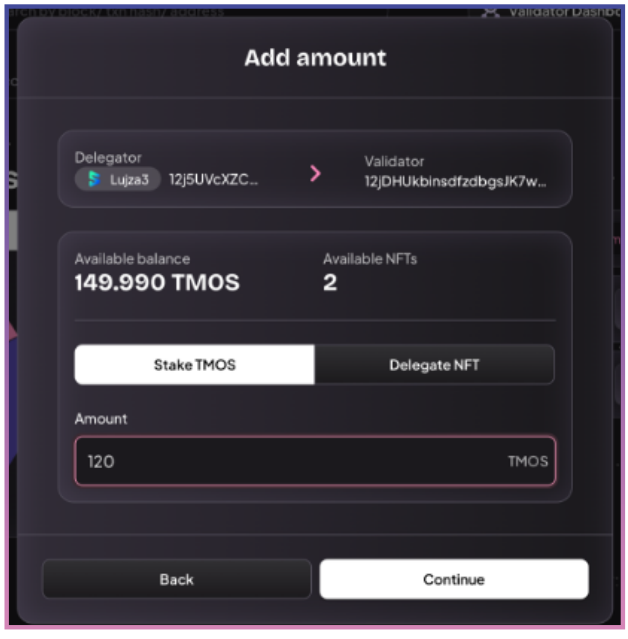
2. Add amount:
You can choose whether you want to stake TMOS or delegate NFT, if you have it in your wallet.

Delegator NFT staking
Click the Delegate NFT button, then click in the field below Choose NFT to see the delegating NFTs in your wallet. Select the NFT you want to delegate.



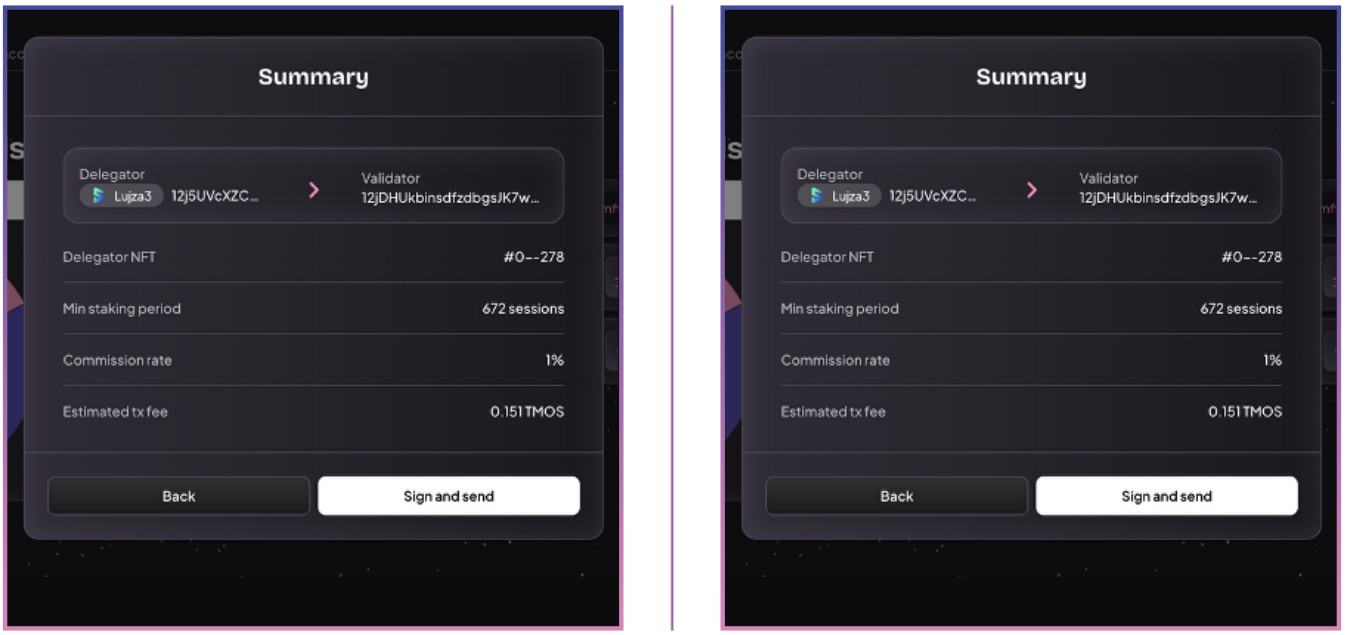
After you have entered and selected your delegating NFT, click the Continue button!

TMOS staking
Enter the amount you want to stake in the amount field. If you enter an amount less than the min. stake or more than your balance, you will see a red warning.



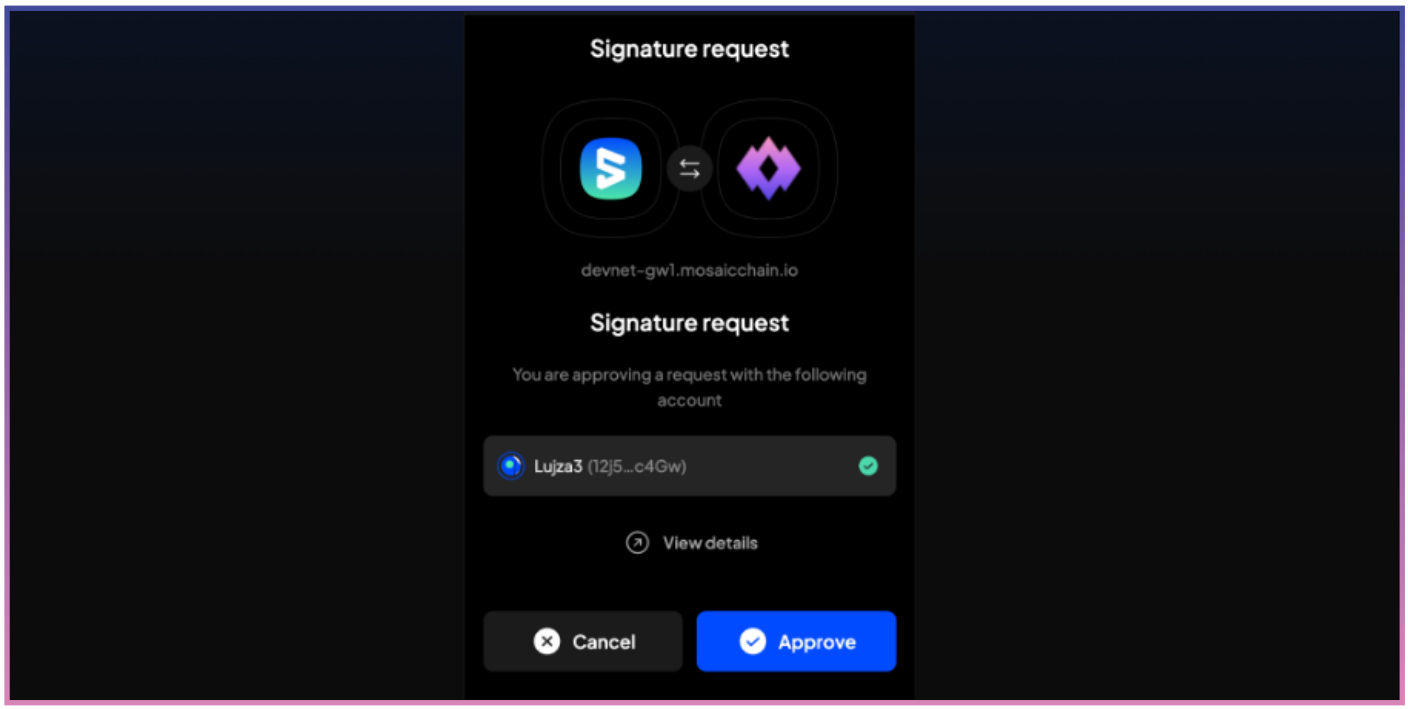
After you have entered the TMOS amount, click the Continue button!

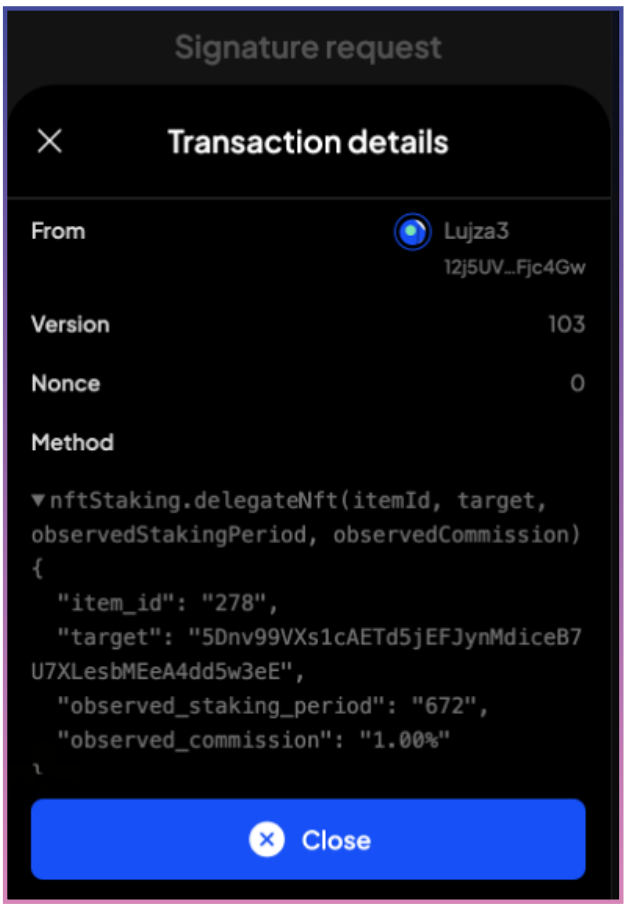
3. Summary:
The window that appears summarizes the data entered for staking. New information is the “estimated tx fee”, which represents the estimated transaction fee for the staking transaction.

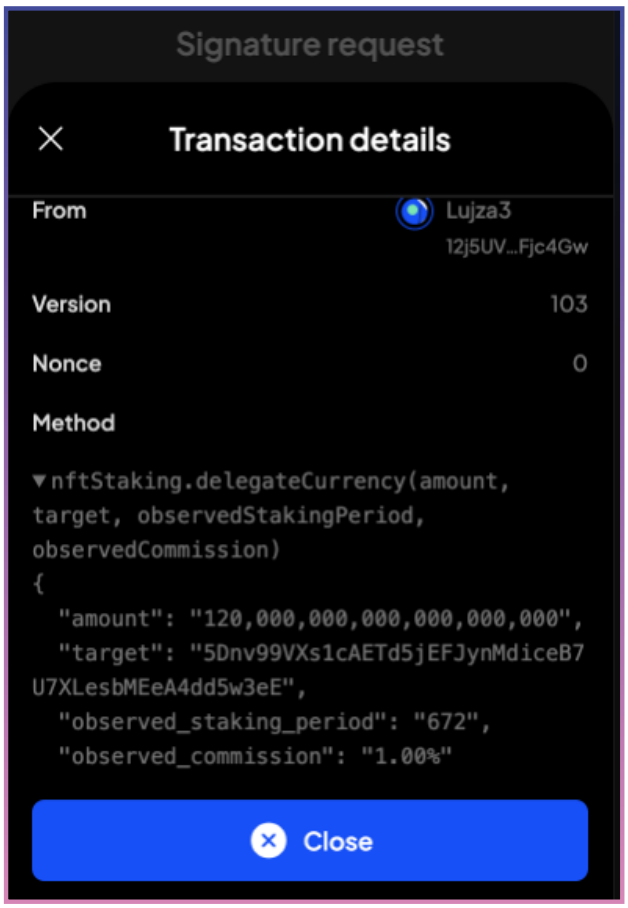


If the details are correct, click the Sign and send button.

4. The SubWallet window will then appear, enter your password if necessary, then view the transaction details by clicking the view details button before signing!

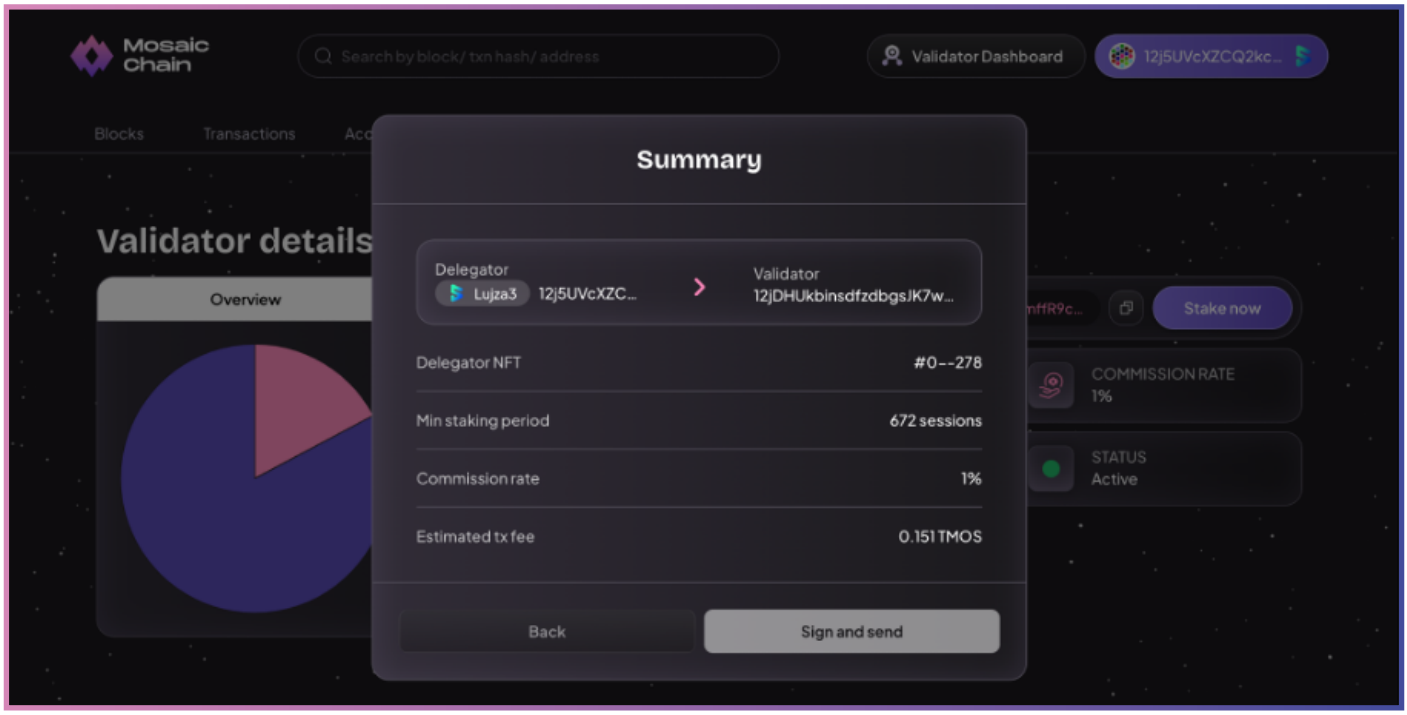




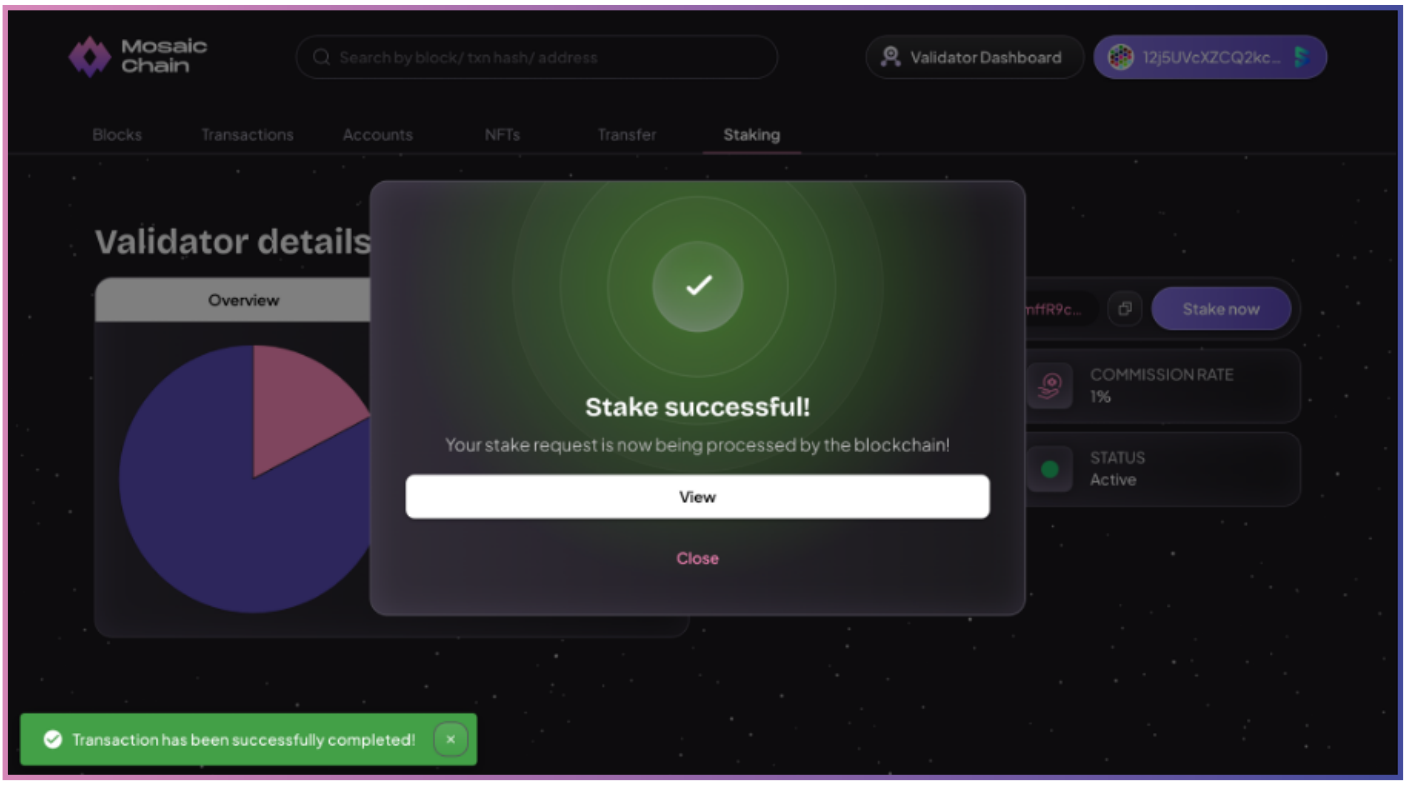


(The amount is indicated in MOS “currency”, 1 MOS = 1018 tiles)

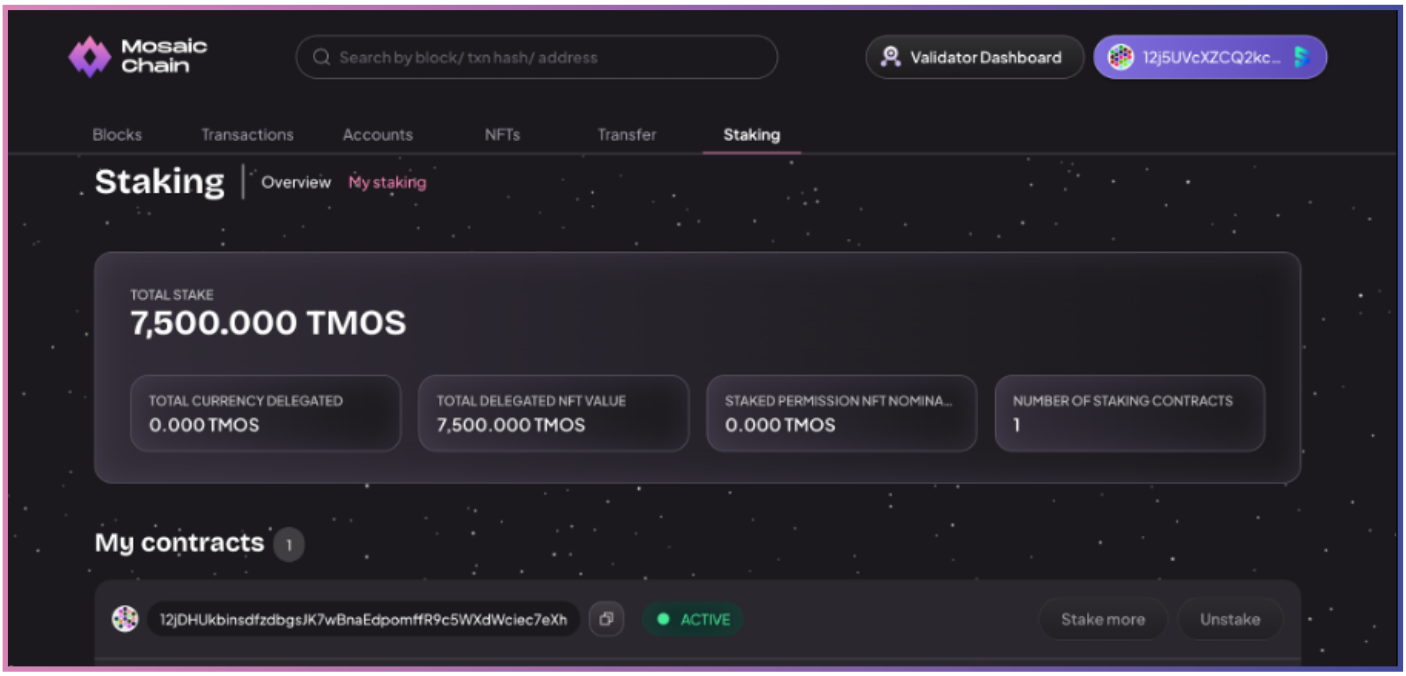
If the details are correct, close this window with the Close button, then click the approve button!
After the SubWallet window closes, you can see the transaction status in the blue bar that appears in the lower left corner of Explorer.

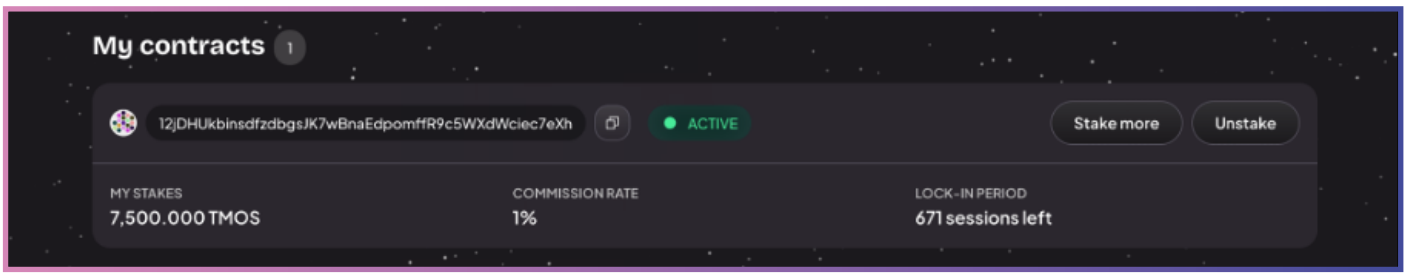


If the transaction has been added to the blockchain, a “Stake successful” message will appear. The “View” button will navigate you to your own staking page, the “Close” button will close this message and you will remain on the validator page. Click the View button.



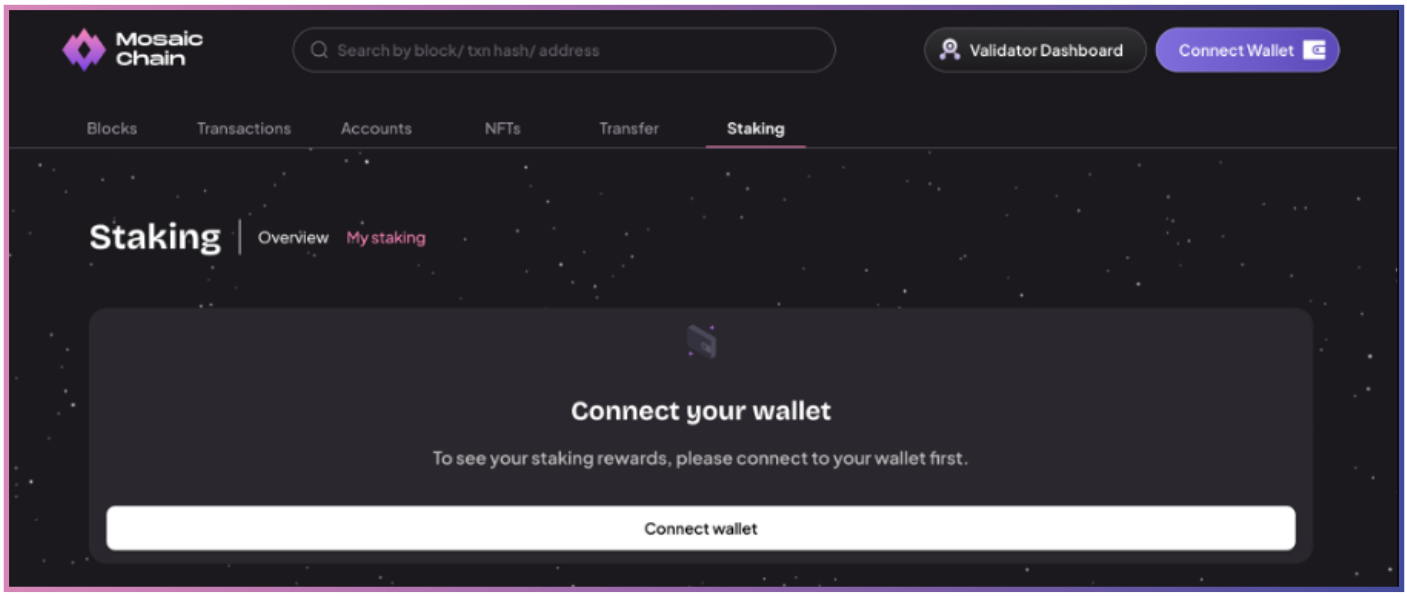
The new stake will appear on the “My Staking” page under “My Contracts”, i.e. among your staking contracts. You won’t see the details yet, because although the staked amount or delegated NFT is immediately deposited (locked or bound), it will only be added to the validator’s stake in the next session. This can take up to an hour. This is because when calculating the reward, there are no partial time units, such as someone who only participated in the validation for 2/3 of the time, etc., so each stake is always taken into account per session.



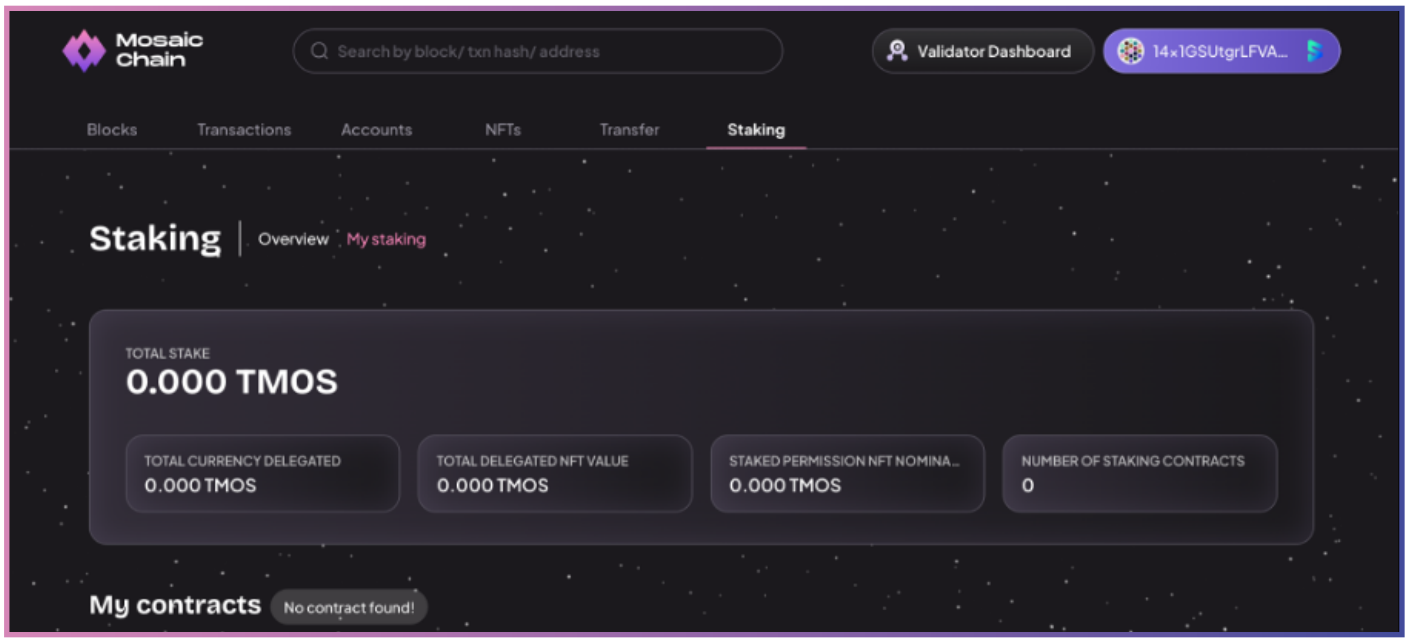


My Staking page

You can see your stake details on the My Staking page. If your wallet is not yet connected to the page, click the Connect wallet button in the middle of the page or in the upper right corner and connect your wallet. (See the wallet connection process at the end of the document.) Select the wallet address for which you would like to see the stake details, you can only see the details of one wallet at a time on the page.

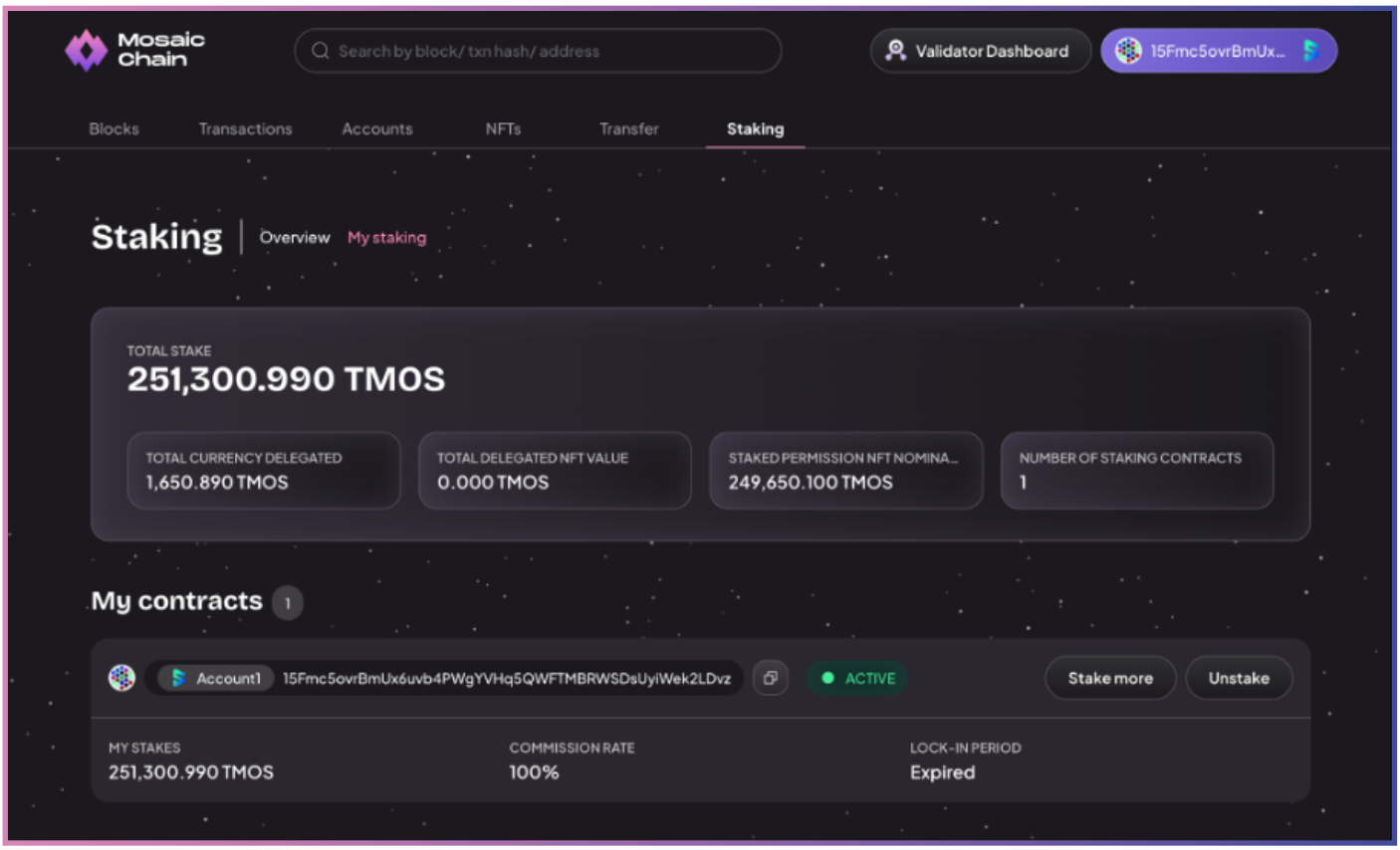


If you don't have any stake yet, all amounts will be zero.



If you have any staking contracts, whether from a bound validator NFT, a delegated NFT, or a staked MOS, summary data will appear in the upper section, as well as a list of your contracts with contract data.

The image below shows the stake page of a validator who has a contract other than his own bound validator NFT, i.e. he has no delegator. In the upper part, we see an amount under total currency delegated, which the validator could have staked to himself in TMOS, but in this example, this is the amount of his rewards.
Among the contract data, we see the validator's wallet address and its current status.
The bottom line shows the total amount of the stake (NFT nominal value + staked TMOS), the commission rate, which is 100% because this is a validator self-stake contract. Finally, it can be seen that the minimum staking period (here lock-in period) has expired, i.e. the bound NFT is no longer "locked", and the staked amount can be unstaked from it. Note: The validator can only unstake the reward here, the validator can unbind the NFT on the Validator Dashboard interface.



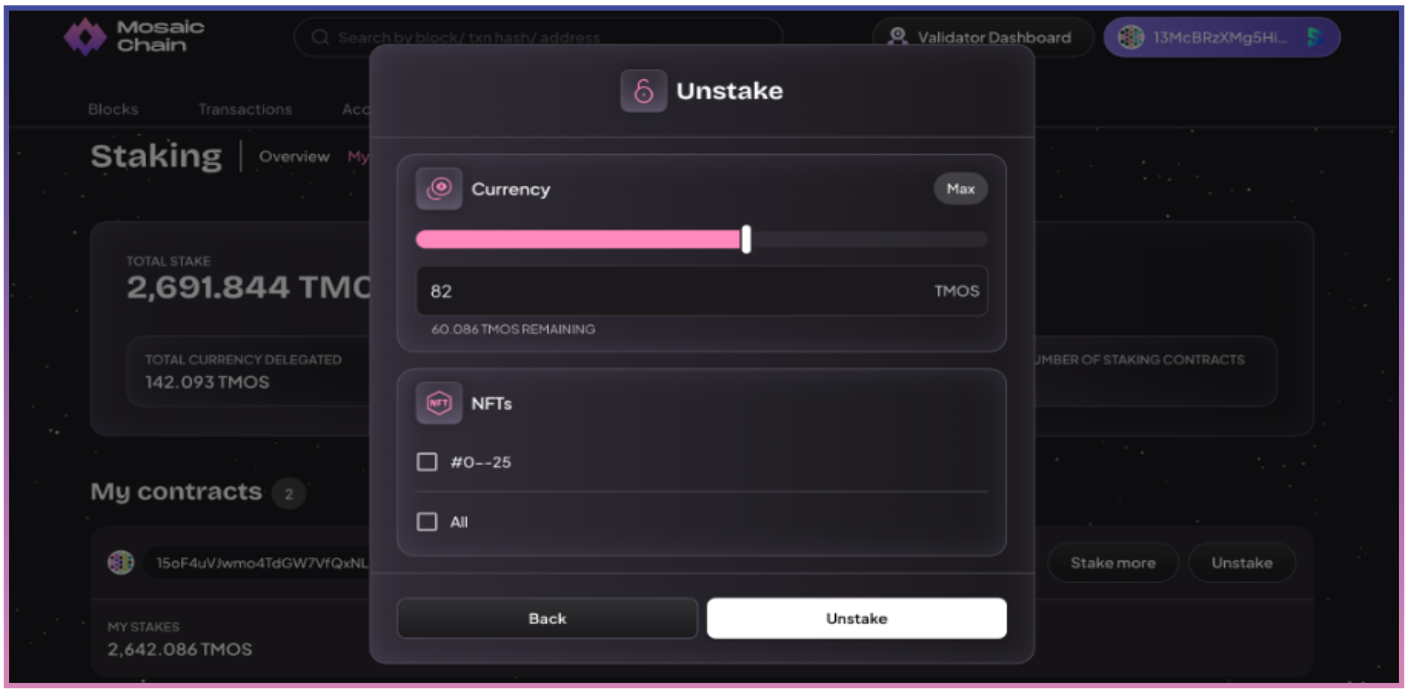
There are two buttons on the contract: Stake more, meaning I stake more, and Unstake, meaning I withdraw the tied tokens.

By clicking on Stake more, you can perform the steps described above in the Staking process section, on the validator in the contract. What is important is that by adding it, the contract is modified according to the currently valid conditions (min. staking period, commission rate), so the minimum staking period restarts for the previously staked amount. The same applies here that the changes will only be applied in the next session, the previous conditions will apply until the end of the current session.

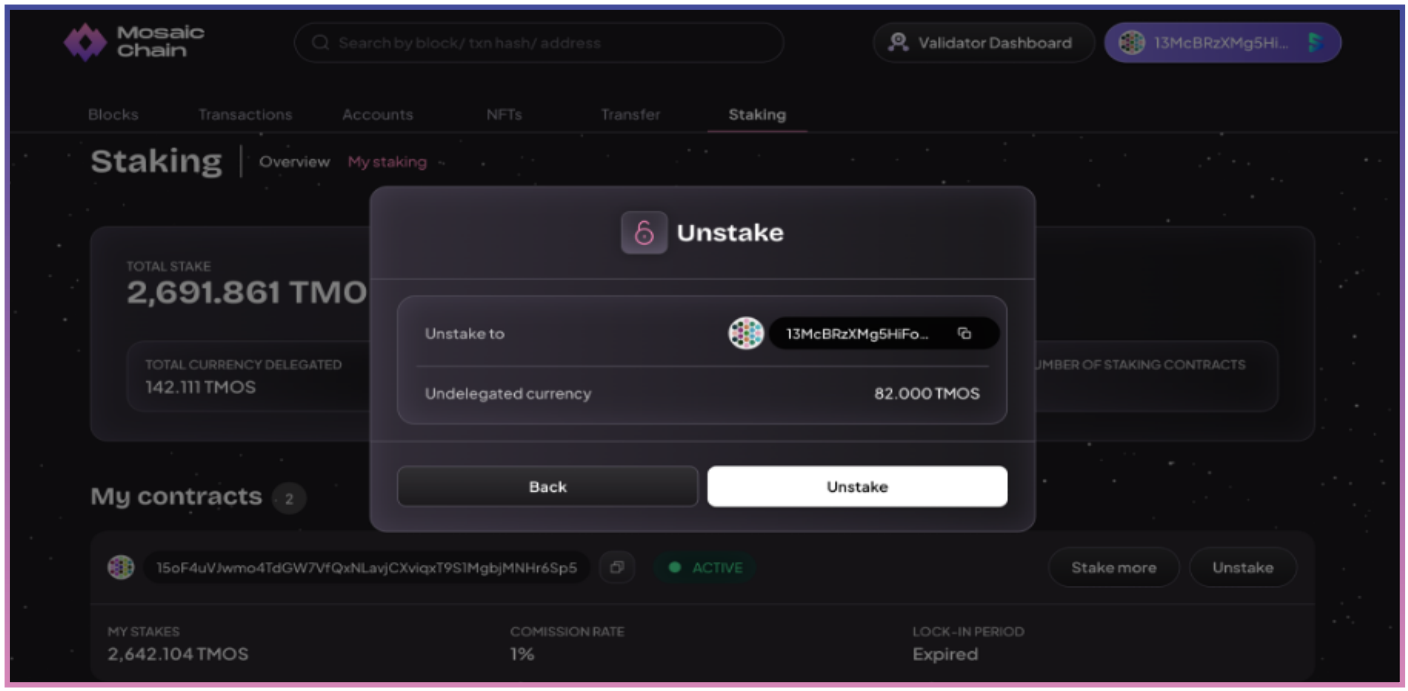
Unstake

On the “My Staking” page, by clicking the Unstake button on the given contract, we can remove our stake amount that is no longer closed from the staking, i.e. unstake it. In the Unstake process, it is possible to unstake a partial amount, only MOS, only NFT, or even all at once. However, it is important that if we do not unstake everything, a stake equal to or greater than the minimum stake amount must remain in the contract.

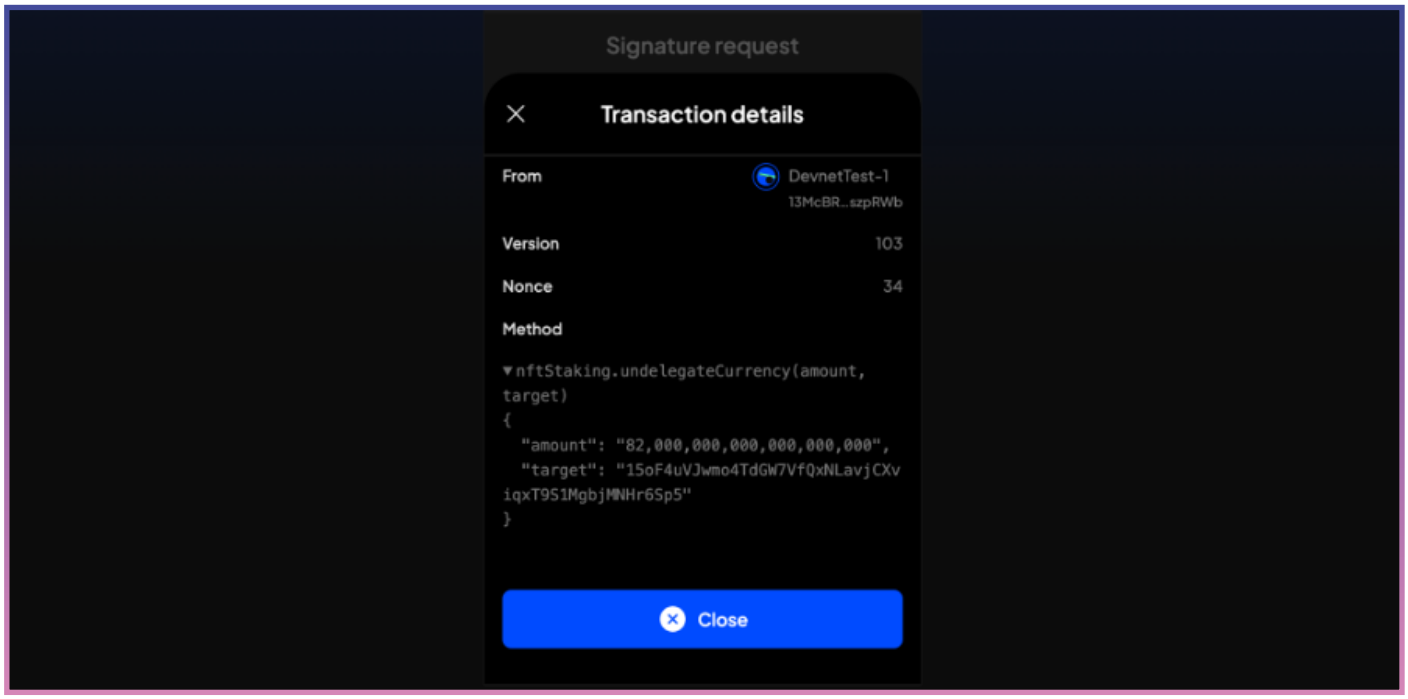
In the pop-up window, select using the slider or directly enter the amount you want to unstake and/or check the NFT you want to unstake, then click the Unstake button!



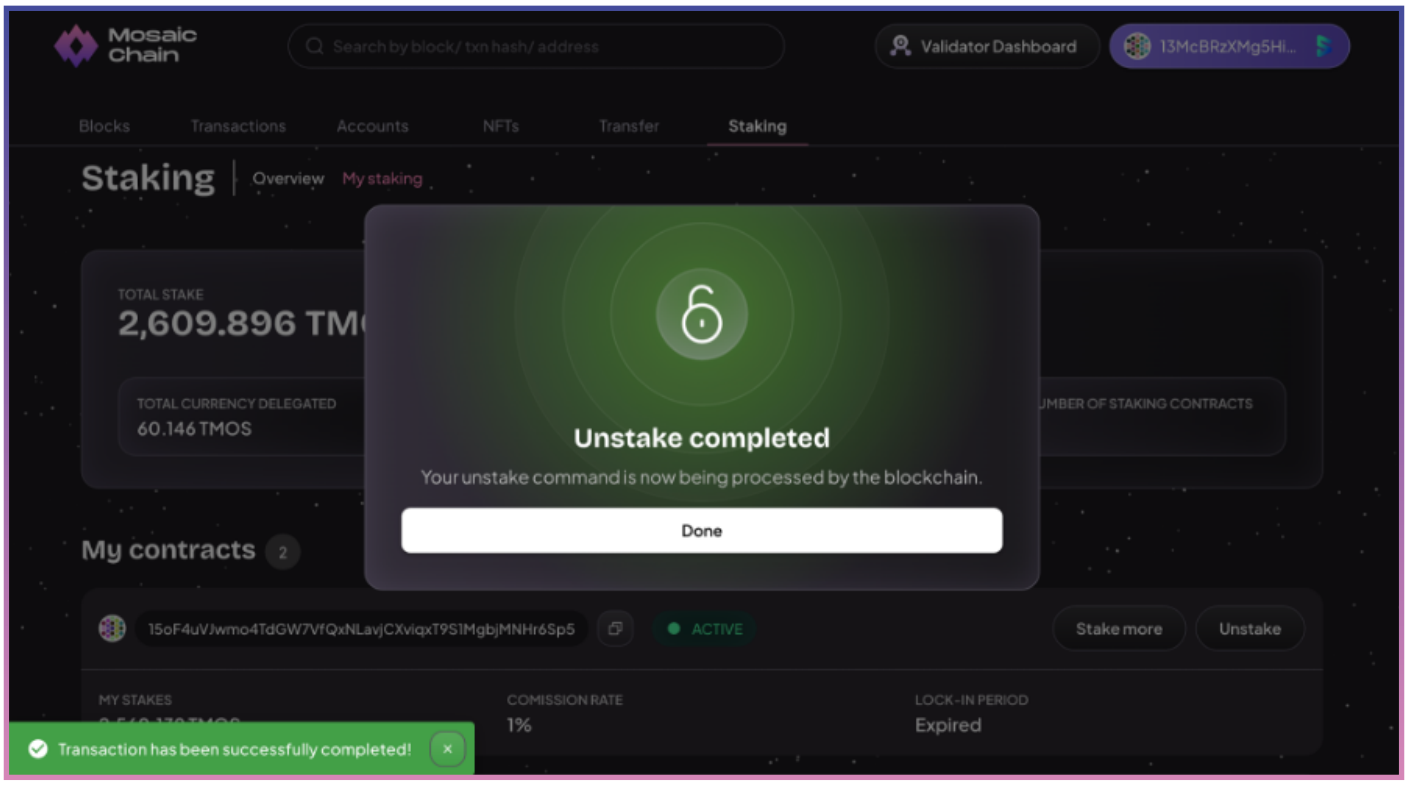
In the confirmation window, click the Unstake button.



In the SubWallet window that pops up, click the view details button to check the details, and if they are correct, close this window, then click the Approve button.



You will see the transaction status in the bottom left corner of the Explorer. When the transaction has been finalized on the blockchain, a success message will appear. It is important to note that even with unstaking, you must wait until the end of the session for the contract modification to take place if the validator is selected for validation in the given session.



Theoretical background

What is staking?

Delegated Proof of Stake is a game theory-based cryptoeconomic security system that effectively secures open-access blockchains where millions of dollars are stored. In order to guarantee the security of the capital stored on the blockchain, it is essential to protect the state of the blockchain from external, malicious events. Such events could include, for example, replacing the validator software with custom software, thereby running malicious code on the node, or simultaneously disconnecting multiple validators from the blockchain.

In order for validators to perform their duties properly, including the continuous production of blocks, they need to be incentivized to behave properly. This is achieved through staking, where tokens are either staked by validators themselves or delegated to them by delegators. If a validator performs as expected, they receive a staking reward.
However, if they fail to fulfill their obligations (for example, disconnecting from the internet or running fake software), the system will reduce not only the validator's own staked tokens, but also the tokens delegated to them. This creates an economic incentive for validators to behave properly.
In the long run, validators who follow the rules and perform well will remain and receive staking rewards, while those who perform poorly will eventually be eliminated.

Validators

Mosaic Chain validators create blocks to keep the blockchain running. As a Mosaic validator owner, you are responsible for monitoring and maintaining the performance of your validator. Each validator has a Validator NFT that is bound to it, which means that the validator is currently participating in the staking system. We can say that this Validator NFT is essentially self-staked, as each Validator NFT has a nominal value expressed in MOS.

Delegator NFT

The nominal value of the delegate NFTs represents some amount of MOS. These NFTs can be delegated to validators. Thus, by delegating them, the delegators add additional resources to the staking system, thereby increasing the economic security of the DPoS mechanism. The owners of the delegate NFTs must constantly monitor the performance of the delegated validators and ensure that the validator does not make mistakes, as this can lead to slashing of funds. The delegate NFTs themselves represent economic value within the blockchain economy, as they represent some amount of MOS tokens.

Valiator commission

The reward received by a validator is divided between the validator and his/her delegators. The validator may charge a commission for the portion of the reward that goes to his/her delegators. This commission is defined as a percentage. Each validator is free to set the commission percentage, which he/she can change at any time, but it cannot be changed below a minimum commission percentage, which is currently 1%.

When a delegating delegate stakes NFT or MOS, they accept the current commission rate. Future changes to the commission rate do not affect existing staking contracts,
ensuring that validators cannot change the commission rate without the knowledge of their previous delegators.

Minimum Staking Period

Every time a delegator stakes a MOS or a delegator NFT, or a validator stakes their own validator NFT, they cannot unstake it for a certain number of sessions (currently 672 sessions) on the Mosaic Chain.
After the minimum stake period expires, if a delegator adds a new stake, the delegator and validator agree to a new contract, which means that their current stake can
receive a new commission in the future, and their minimum stake period applies to the existing stake as well, not just the increment.

Slashing, Auto-Chilling and Unbinding

Since validators can be slashed, i.e. their funds can be reduced, the nominal value of validator NFTs can fall below their initial nominal value. Slashing can occur multiple times depending on the behavior of the validator. When a validator faults twice in a row, it receives two slashes and its status automatically changes from active (i.e. faulted) to chilled. Automatic chilling is a safety mechanism that protects stakeholders from excessive abuse and financial loss by removing the validator from the subset of active validators and preventing it from returning until it is manually unchilled.

The most drastic step in protecting against misbehaving validators is unbinding, the unbinding of a validator NFT. If a validator NFT value drops below 80% of its initial face value, the validator NFT is unbound, or not bound.
Unbinding removes all delegated NFTs and staked MOS tokens from the misbehaving validator. This mechanism protects delegators from further losses, especially those who fail to unstake during the minimum staking period. These freed delegator NFTs and MOS tokens can then be delegated to another, more trusted validator.

NFT Top Up

When a validator falls below the 80% threshold after multiple penalties (the current face value is below 80% of the initial face value), the validator automatically enters the “Not bound” state. In this state, the validator will not accept further delegations
and will not participate in the staking system. However, this state is not permanent, as the validator’s NFT can be topped up above 80%, allowing it to rejoin the staking system.

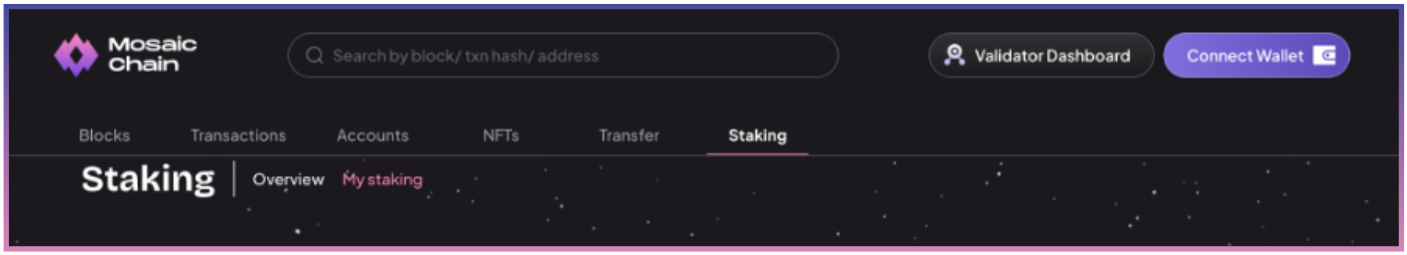
Kick Delegator

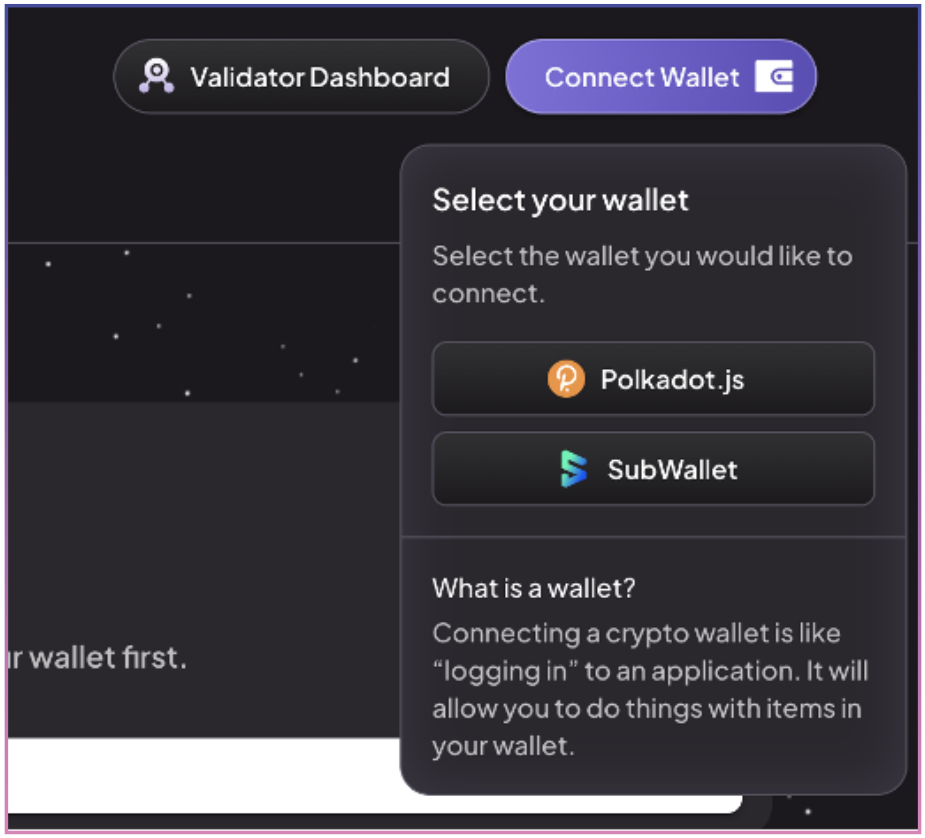
After the minimum staking period has expired, the validator can also decide to remove a delegator, i.e., terminate the contract between them, which means that the delegated NFTs and MOS tokens can be released at the beginning of the next session.

So the delegator can stake these with another validator, or even with the same validator, according to its currently valid conditions.

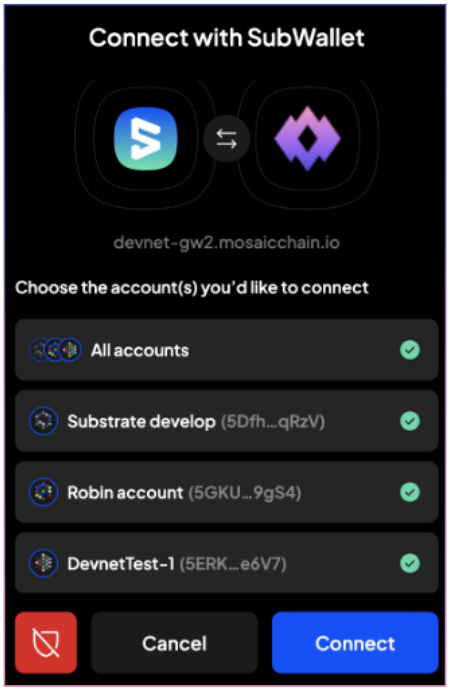
Connecting your wallet

In Explorer, click the Connect Wallet button in the upper right corner, then select SubWallet.

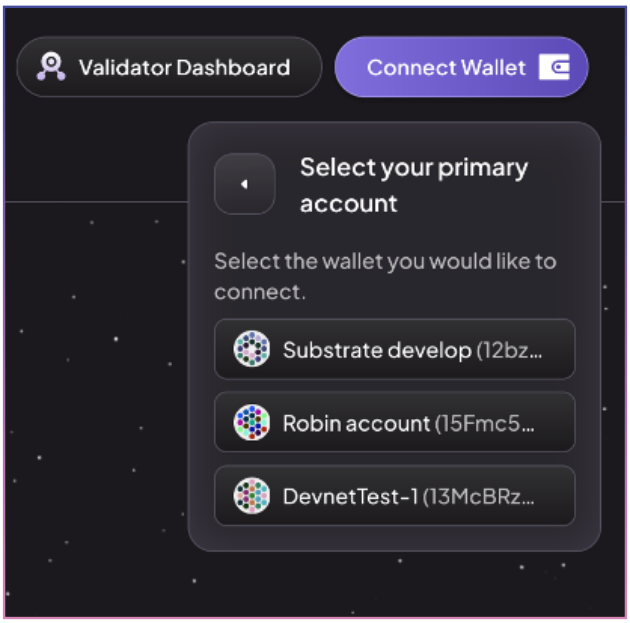




If you haven't connected your SubWallet to this page yet, the SubWallet window will appear. Select all accounts and click the Connect button.



Then in Explorer, select which wallet you want to connect with. If you only have 1 wallet, click on it anyway.



A green message will appear stating that you have successfully connected your wallet, and you will see your wallet address in place of the Connect Wallet button.

Attention! In case of SubWallet mobile application on phone, you need to open the Explorer page in the SubWallet browser, that is the only way to connect! In the bottom menu of SubWallet, select the dApps menu item, enter devnet-explorer.mosaicchain.io in the search box at the top of the page that appears, you can connect your wallet on the website that appears here as above. You can find detailed instructions here: https://docs.subwallet.app/main/mobile-app-user-guide/connect-dapps-and-manage-website-access#connect-dapps