

Selene Network Marketplace

The heart of the Selene Network marketplace is a Theta network based smart contract with bidding functionality. It is designed to be used by people that want to exchange ERC-721 compatible NFTs on the Theta blockchain in a trustless manner.

Because the marketplace is built upon a permissionless smart contract, anyone can use its functionality as long as you play by the rules enforced by the smart contract.

Key Features

- Prices are stated in US dollar terms (pennies).
- Any TNT-20 compatible token can be listed for payment.
- Any Theta blockchain ERC-721 NFT can be listed.
- Bidding functionality is built in.
- It is possible to list for a specific recipient.
- Listing and Claiming commissions are shared 50/50 with agents.

Restrictions

- Must be a Selene Network Participant NFT holder to play.
- Requires a Metamask enhanced browser.

Overview

Anyone can use this marketplace smart contract and the Selene Network software has been enhanced to facilitate those interactions.

The smart contract is built around the concept that you List, Buy and Claim resources to & from the contract. When you do, you get to interact with the marketplace contract based on your role in the transaction. Owners get different functionality than buyers. Bidding overrides buying and has rules that must be followed.

Once you understand the three key areas of the contract, most everything will make sense on an intuitive level as you interact with the code.

Listing

In order to get your NFT into the marketplace, you have to present it, approve the collateral transfer and have it listed.

Presenting your resource

Here is an example of how you present a resource.

<https://amorstyle.com/nfts/mpv2/?nftcontract=0x63d45993c17d85cadafb0a3a88117f9766d126af&token=42>

Note that there are two parameters on the URL: nftcontract and token.

When you provide this information to the marketplace code, it will reference the blockchain in order to see if you are the owner of that resource. If you are, the “List in

Marketplace” section below the image will be displayed. If you are not the resource owner, that “List in Marketplace” section will be disabled.

List in Marketplace

There are two ways to list: List and Private Listing.

To list your resource in the marketplace so that anyone can buy or bid on it, you provide the asking price in pennies and, possibly, an alternative payment token (like wtheta or GROVE). After providing the required information, press the list button.

If you want to list your resource for a specific recipient, provide the price (in pennies) and an alternative token along with providing the recipient address. Once provided, press the List button. When providing a recipient address, only that address will be allowed to buy the resource.

Approving

Once you press the List button, the process of getting the resource into the marketplace is a two step process which is assisted by Metamask: approve the resource transfer and then perform the transfer.

When Metamask pops up with the approval message, you should see that the correct contract is listed along with the proper token id. In general, ERC-721 compatible smart contracts will allow the resource owner to grant permission for operations like placing the resource in a marketplace.

After the approval is serviced, Metamask will pop up a second time which is where the code calls the marketplace contract to capture the resource on your behalf. Note that the Tfuel cost will be about 10 cents. That is the commission for listing.

After confirming and waiting for the request to be serviced, the resource will be in the marketplace in the name of the resource owner. The Owner value is displayed under the marketplace item.

Every resource placed in the marketplace gets a unique identifier which will remain unchanged for the time that the resource is in the marketplace.

After the resource is successfully captured by the marketplace smart contract, it will be displayed as the last resource added to the marketplace in the ‘Marketplace Offerings’ section. “Marketplace Offerings” items are clickable and the URL displays its unique Id there as mp=N.

Buying

Ownership of the resource can be modified by either buying or bidding on a marketplace resource. The simplest way is to buy.

If there are no bids on the item, the buy button will be enabled on the resource for everyone except the resource owner. It is displayed in the lower right hand corner of the marketplace image.

When the buy in Tfuel icon is pressed, Metamask pops up in order for the visitor to confirm the buy. Inside of Metamask, the buyer should see that the marketplace software

will have translated the resource price from pennies to tfuel (based on the current market value of tfuel).

When buying with an alternative token is used, the buying operation will first seek approval to transfer the alternative funds and then perform the buy using those funds.

The work that is done on the blockchain (after confirmation) is to credit the resource owner with the tfuel funds (or alternative token funds) and assign the buyer as the new owner. During this time, the resource is marked as unavailable.

At this point, because the resource ownership has changed, the resource can only be claimed by the buyer and the previous owner will find that the contract holds a balance that they can withdraw.

Bidding on an item is a bit more complicated. That process is covered below.

Claiming

Removing an item from the marketplace is as simple as clicking the 'Claim' icon in the lower right-hand corner of the marketplace image. When that button is pressed, Metamask pops up with a call to the claim function in the contract. The cost of claiming a resource (in this contract) is 20 cents worth of tfuel.

When the claim is processed within the marketplace smart contract, it transfers the resource to the registered owner and the specific marketplace id is retired.

Managing your resource

It is not recommended that you keep your resource in the marketplace contract for extended periods of time. Yet in some cases, this might be beneficial.

When resource ownership changes hands, the resource is marked as not available in order to give the new owner a clean path to either claiming the resource or relisting at a price that they want.

To do this, there is Reset functionality that allows the new owner to set the price and toggle the state of the item to available. An item cannot be bid for or bought when in the not available state. But it can be viewed and withdrawn by the owner.

Bidding

The bidding functionality is coded to help mitigate the bidding process and enable humans to compete in a reasonable way for the resource.

Bidding for an item

Any marketplace participant (except the owner) can bid for an item. Only the account that has implicit ownership of the resource can accept the bid. Also, because every bid requires the full amount of the bid, it can be settled immediately if so accepted.

This is best understood by considering the following three situations and we'll think of the participants as a lister and bidder (or multiple bidders).

Low bid

If a bid comes in below the asking price for the item, the owner is the lister. The marketplace smart contract will not part with the resource until the asking price is received or the lister accepts a low bid.

Buying outright

If there is no highest bidder for the item and someone presents enough tfuel to buy the item, ownership will be immediately transferred.

If there is a highest bidder recorded on the item and someone presents enough tfuel to buy the item, the smart contract considers the highest bidder as the new owner, but there is a bid lock period that must expire before the resource can be claimed.

Higher bid

If there is no bidding recorded for an item, buying it outright immediately transfers the resource.

Yet, if there are bidders on a resource, the competition has a short block window in which to place a higher bid. The resource will remain 'locked' in the marketplace until bidding finally times out and the highest bidder is able to accept the reward.

Accepting the award can be done by either the highest bidder or the resource owner by pressing the Accept or Cancel button. When the price presented for the item is above the offered price, the marketplace contract assumes that the highest bidder will be the new owner and implicitly allows the highest bidder the ability to trigger settlement of the auction.

There is only one highest bidder

When bidding on an item, the bid will only be accepted if it is greater than the previous highest bid. The marketplace contract will update the highest bidder and value presented.

The previous highest bidder will have its address credited its full bid. That account will be added to the creditors of the marketplace and the previous highest bidder can withdraw their funds at any time.

Because bidding can happen in either currency, as soon as one of the bidding types gets control of the resource (buying bid or higher), all bidding is locked to that same currency. In other words, if the alternative token is GROVE and the listed item requires 1k GROVE to buy and there is a bid of 1k GROVE, no more native coin bids will be accepted. Also, first bidding type to get to a controlling value (buy price) will determine which type of currency bidding will continue on.

Restrictions on bidding

The marketplace contract uses time to help facilitate human friendly trading.

Bid lifespan

When a bid is placed on an item, it is expected that that bid will have a lifespan long enough for the lister to see it.

The default value is a few hours' worth of blocks.

During this period of time, the bidder cannot cancel their bid.

Bid Window

After a bid is placed on the item, no new bids will be accepted for that item for at least 9 blocks.

Bid Timeout

In order to allow for humans to bid, there is a short block window that allows the next bidder to keep the bidding alive. If no new bids come in during this window, either the previous owner or the highest bidder can trigger settlement by pressing the accept bid or cancel bid buttons. This window is about an hour long.

Funds in the marketplace

The marketplace has basic check book type functionality built in. Any account that holds a balance can withdraw their funds using the Withdraw button.

This holds for any account that earned commissions by facilitating access to the contract.

When a purchase is made, the resource owner gets credited the funds and the buyer is assigned the new resource owner. In this case, the owner will have a tfuel balance and the buyer will have the ability to claim the resource. This is considered settlement within the marketplace contract.

If someone bids for a resource and they are outbid by someone else. The bid that they offered is credited to their account and they can withdraw it at any time.

If the lister accepts a low bid, settlement happens immediately.

If bidding exceeds the offer price for the item, anyone outbid will find their bids available for withdraw and the highest bidder will have to wait for the bidding timeout before settlement can be triggered.

If someone offers a low bid and it is not accepted, it can be canceled after the initial bid lock timeout. Canceling credits the bidder which makes the funds available for withdraw.

When withdrawing funds, its an all or nothing process. If the visiting account holds some Tfuel along with coins of a couple different token contracts, all will be returned when a withdraw is requested.

Finding items in the marketplace

The contract has an enumeration function that allows anyone to discover the items in the marketplace.

The enumeration function starts with the latest and loops until it finds the next available item.

Because the marketplace smart contract is listed as a resource owner of the items in the marketplace, it is expected that the high level code that presents the marketplace will use other means to track what is available for purchase or what has been purchased.

Resource management

It is recommended that users don't keep large sums of funds on the contract for any extended period of time. If you bid for a resource and get outbid, there is no reason why your funds should remain in the contract.

To help facilitate good fund management, this contract is designed so that inactive accounts can be swept by the contract owner if they are abandoned. Any address that interacts with the contract is considered an account. If the account remains inactive for a long period of time (say, 6 months or so), that account can be swept clean by the titled owner.

This basically means that if you put a resource in the contract, don't just let it sit there forever. Also, if you send the contract tokens, don't let them just sit there forever.

Also note that after the timeout period, the titled owner of the contract can claim the resources, but it doesn't mean they will.

Finally, any time an account is used, it's last use date is made current. The inactivity timeout is measured from the last update block.

Disclaimer

The marketplace is designed to help someone trade an item over a short period of time. Mention the sale on social media and if it isn't claimed in a reasonable amount of time, remove the resource.

Don't leave your items in the marketplace. If there is a bug or vulnerability, it's better to hold the resource in your own wallet rather than leaving it in the marketplace.