Amun | June 2020

Amun Leverage Tokens

A smart contract to enable purchases of Short and Leveraged Crypto Exposure for Stable Coins

Version 2

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Introduction to Amun

Amun is a leading cryptocurrency issuer which aims to make purchasing crypto more accessible, and efficient.

Under its 21Shares brand, Amun is the world's largest issuer of crypto exchange-traded products (ETPs). The 21Shares suite of ETPs has simplified access to crypto for both institutional and retail investors in the traditional finance community. In a similar fashion, Amun aims to provide tokens that will make it easy for the crypto community to access sophisticated strategies that are not otherwise readily available in this space. Amun is a team of entrepreneurs, engineers, and financial product developers who are uniquely placed to revolutionize cryptocurrency investing through the issuance of our broad range of tokens. Our goal is to make these tokens present a new paradigm in cryptocurrency investing and to facilitate their use.

Our investment in superior technology and automation has enabled us to both release products, as well as work directly with top organizations including the Bitcoin Cash Foundation, Bitcoin Suisse, Binance, Bitwise, Coinbase, FlowTraders, Sygnum, and the Tezos Foundation as launch partners or customers of the Amun Platform.

Disclaimers

This document sets out some of the technical details behind the Tokens. The Tokens are issued by Amun Limited (the Issuer) who accepts no responsibility for the contents of this document. Any information provided in this document or otherwise by the Issuer is given for general information purpose only and the Issuer does not provide any warranty as to the accuracy and completeness of such information. Any person considering purchasing, selling or otherwise dealing in the Tokens must make their own determination as to the suitability of the Tokens for their own purpose.

The Tokens are complex products which incorporate a high degree of risk and should only be bought or traded in by persons with appropriate technical knowledge who have experience with similar products.

Nothing in this document (or any other documents mentioned herein) is or should be considered to be an invitation to enter into an investment and is not intended to be an offering of securities in any jurisdiction nor does it constitute an offer or an invitation to sell shares, securities or rights belonging to the Issuer or any related or associated company. Neither the Tokens nor any documents associated therewith have been registered with or approved by any regulator in any jurisdiction.

The Tokens are not available for purchase by individuals or entities who are ordinarily resident in the United States, Switzerland, the Seychelles or any other country on the Prohibited List

available on the website of the Issuer. The Issuer reserves the right to restrict the sale of the Tokens in any jurisdiction or to any individuals or entities from time to time.

The legally binding terms relating to the Tokens are set out in the Terms and Conditions and the Terms of Service applicable to the relevant Tokens.

Summary of Tokens

Description	ERC20 Tokens providing holders with inverse and/or leveraged notional exposures to daily price movements in a certain Crypto asset or group of Crypto assets. In each 24 hour period each Token will operate like a stablecoin giving a fixed exposure to the performance of the Reference Asset(s) in that 24 hour period (before fees and expenses)
Issuer	Amun Limited
Domicile	Seychelles
Token Value	TV(i) = 100 x LF(i)(1-daily % change in Reference Asset Price in the Leverage Period) – F(i) Where: TV(i) is the Token Value of a Token of type i L(i) = Leverage Factor for a Token of type i F(i) = the Fee for a Token of type i at the time at which the Token Value for that Token is being calculated
Fees	Fees applied to the Token Value will be: • a maintenance fee; and • a leverage fee

	A Mint Fee and Burn Fee will also be charged for each Mint and Burn of Tokens
Valuation point	5pm CET
Reference Asset(s)	One or more crypto assets as set out in Schedule 1 to the Terms and Conditions for the relevant Tokens
Reference Price	As set out in Schedule 1 to the Terms and Conditions for the relevant Tokens
Minting	Issued to Authorised Users of Jasper who have completed required KYC/AML and are whitelisted to use the system. Issued in exchange for delivery of the relevant amount of Delivery Currency into Issuer's wallet. Available 24/7. Minting fees charged on a sliding scale up to 10bps.
Token Features	Intended to be bought and sold on exchanges. Holders have no rights in any assets held by Issuer.
Burns	No obligation on Issuer to accept Burn Requests but solely at the Issuer's discretion. Forced burns by Issuer permitted against all or some holders for regulatory reasons or for closure of particular Tokens. Settled in stablecoin Base Currency. Available 24/7.

Other key terms	Holders of Tokens have no rights in assets held by Issuer or any of its affiliates. The Issuer intends to but is not required to voluntarily collateralise the notional exposure of the Tokens. These assets are not secured for the benefit of or otherwise held on behalf of holders of the Tokens.
Assets held	The Issuer is not required to hold or manage any assets on its balance sheet in connection with the Tokens of any type. The Issuer may choose to hold assets in order to allow it to meet any accepted Burn requests through holding of stablecoins, the relevant Reference Assets and a variety of other instruments used for hedging including, but not limited to: futures; options; and structured products.
KYC Provider	Onfido
Exchanges	The Issuer hopes to make Tokens of all types on various exchanges such as Bequant, Bitcoin.com, HitBTC and Liquid. There is no guarantee that Tokens will be available on these or any other exchanges.
Key documents	Lite Paper/White Paper/Terms and Conditions/Terms of Service /Prohibited List

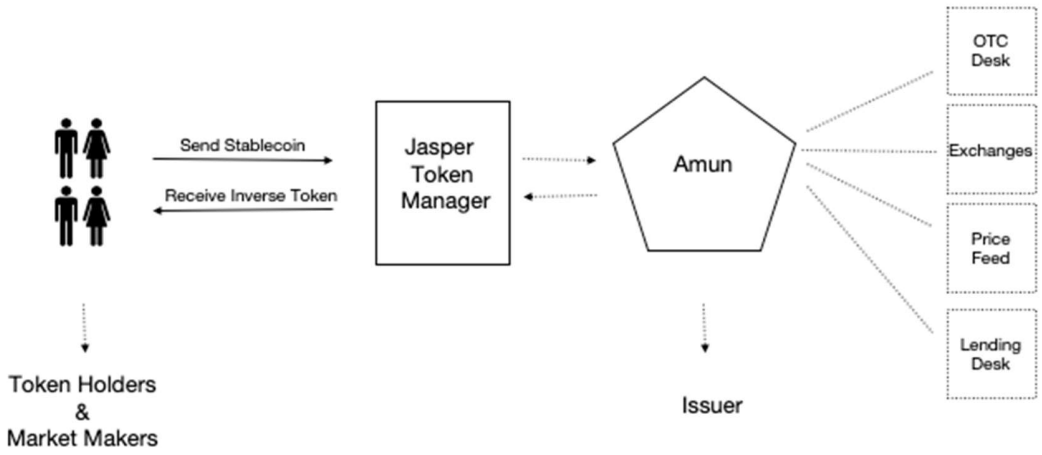
Summary of Token Operation

As set out above, the Issuer is not required to hold any assets to back the exposure of Tokens however it may choose to do so and in such cases will make use of automated systems to do so. The descriptions contained in this document relate both to the system used by the Issuer to manage the Mint or Burn of Tokens as well as the system it may use to hedge any exposure of the Issuer resulting from the issuance of the Tokens. Holders of Tokens have no rights in the assets of the Issuer and the Issuer may elect not to accept Burn request for Tokens - interested parties should consider the current Burn Policy of the Issuer, available on its website.

Tokens are expected to be available on various exchanges. The descriptions set out below relate only to the Mint and Burn of Tokens by Authorized Users of the Issuers online order system - the Token Manager- also known as Jasper.

In implementing the Tokens, the Issuer uses a proprietary system known as Jasper which consists of the Jasper Token Manager, through which Authorized Users place Mint and Burn requests, the Jasper Trading Engine which the Issuer may use to hedge its own exposures and the Oracle which acts as a data store and bridge between the different parts of Jasper and any on and off chain transactions.

To hedge the exposure, the Issuer, Amun, will use off-chain Exchanges, OTC Trading Desks and Lending Desks through opening short and long positions and pegging crypto exposure to the tokens.



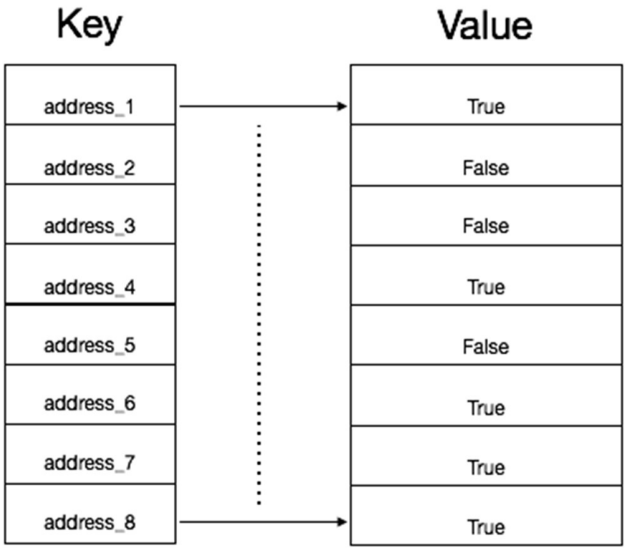
Token Mint and Burn

To directly participate in the Issuer's MINT and BURN process users must be registered as "Authorized Users" of Jasper and have passed the Issuer's internal know your client and anti-money laundering checks. Such checks will be carried out by a third party and are subject to applicable law and regulation as well as the Privacy Policy available on the website of the Issuer..

Market Makers

All market makers looking to MINT and BURN tokens must KYC themselves through Jasper. Once KYC is complete, an Ethereum address corresponding to an authorized account will be approved by the Token Manager. Whitelisted addresses are stored in a key-value mapping (shown below) on the Ethereum blockchain, allowing for quick verification on-chain. The contract owner (i.e. an Amun operated Multisignature Wallet) is granted the ability to perform the following actions with whitelisted addresses:

- **setWhitelistedAddress:** Approve newly KYC'd participants and store their Ethereum Address in a key-value mapping on-chain
- **removeWhitelistedAddress:** Remove previously whitelisted addresses from on-chain key-value mapping
- **updateWhitelistedAddress:** Remove previously whitelisted address and set new whitelisted address.



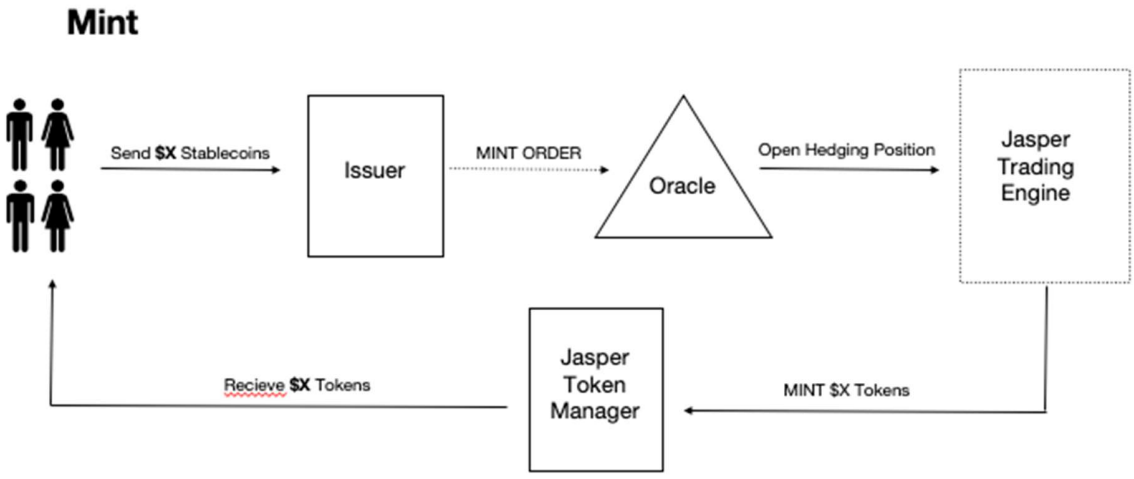
Mint and Burn

Once an address is whitelisted, it may take part in the mint/burn process of tokens. The mintOrder and burnOrder workflows together comprise the primary market of the token. The two entities involved in the mint and burn workflow, are the *Jasper Trading Engine* and the Jasper *Token Manager*. An oracle server (i.e. a highly secure data relayer) is used to bridge communication between the Jasper Trading Engine and the Jasper Token Manager smart contract system.

The steps involved in MINT and BURN processes are illustrated below. The Issuer is under no obligation to accept Burn requests and users should check the latest Burn Policy in respect of the Tokens available on the Issuer's website.

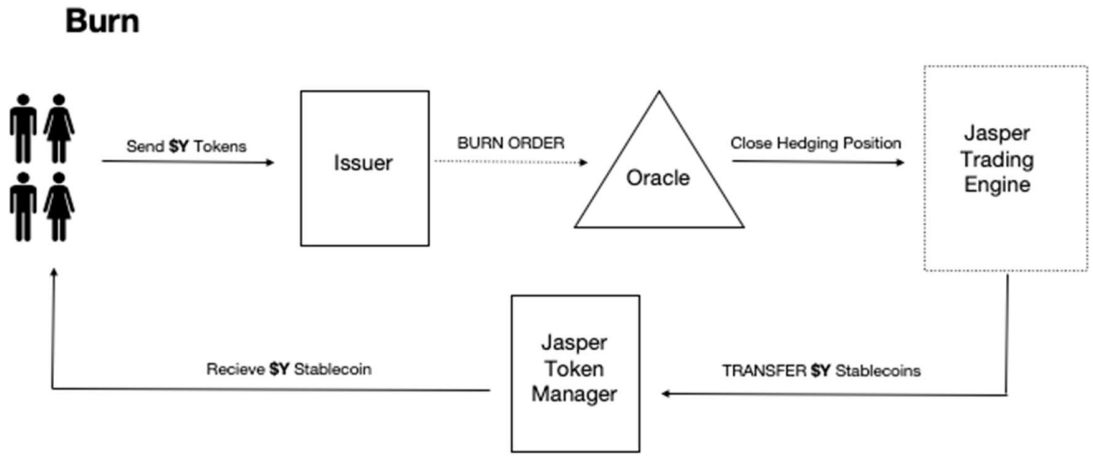
MINT

1. User registers account, passes KYC check, and provides Proof of Residence documents - Users must not be residents of the Secyhelles, Switzerland, the United States or any other country on the Prohibited List on the Issuer's website.
2. Upon successful registration, the Authorized User (AU) whitelists the wallet address that it will use in the mint/burn process.
3. The AU places a mint order by sending $X amount of stablecoin to the smart contract representing the Token Value and any applicable fees and expenses.
4. After this transaction is mined and confirmed, Jasper Trading Engine (JTE) initiates the corresponding trades on behalf of the Issuer to provide the relevant exposure.
5. Once the trading engine successfully concludes short selling, the Jasper Token Manager validates the results of the trade and mints $X (less fees) worth of tokens. These tokens are allocated to the whitelisted wallet created in (2).



BURN

1. Authorised User (*AU*) sends Tokens to the Jasper Token Manager.
2. The Oracle reads the BURN request and initiates an order at the Jasper Trading Engine (*JTE*).
3. *JTE* initiates the corresponding trades on behalf of the Issuer to close the relevant exposure.
4. The Jasper Token Manager transfers stablecoin to the *AU* and burns the previously sent Tokens.

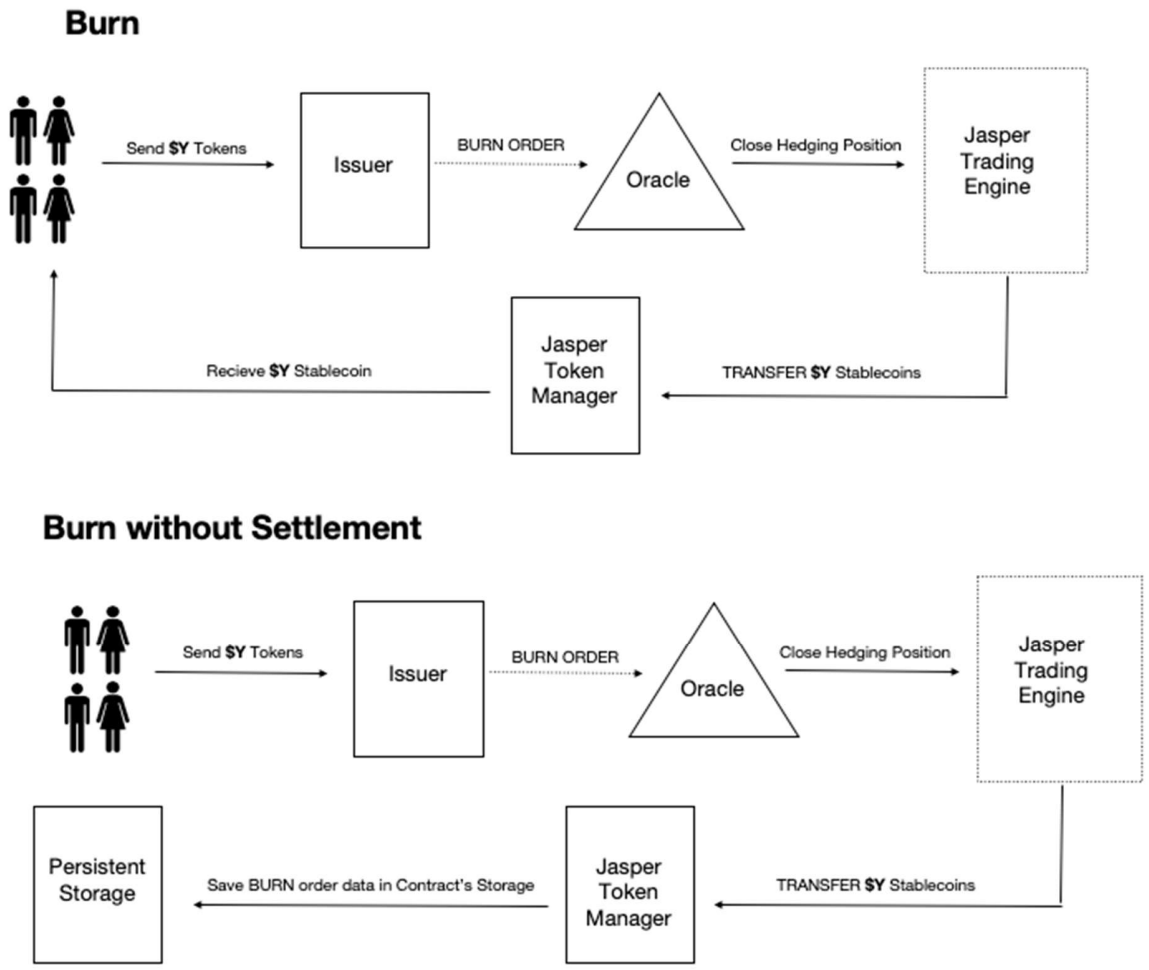


EDGE CASE: Burn with Delayed Settlement

In the event a burn order is placed and accepted by but the Issuer is not in a position to instantaneously fulfill the burn, then the smart contract executes a delayed settlement burn. This allows AUs to lock in a price for their burn order and receive stablecoin within 24 hours of order placement.

1. Authorised User (*AU*) sends Tokens to the Jasper Token Manager.
2. The Oracle reads the BURN request and initiates an order at the Jasper Trading Engine (*JTE*).

3. *JTE* initiates the corresponding trades on behalf of the Issuer to close the relevant exposure.
4. If the Issuer is not in a position to satisfy the burn request at that point, the Jasper TokenManager saves BURNorder data in the Persistent Storage Contract.
5. At a later date, the contract owner settles the unsettled burn by retrieving the order data from the Persistent Storage contract.



Exposure and Daily Rebalance

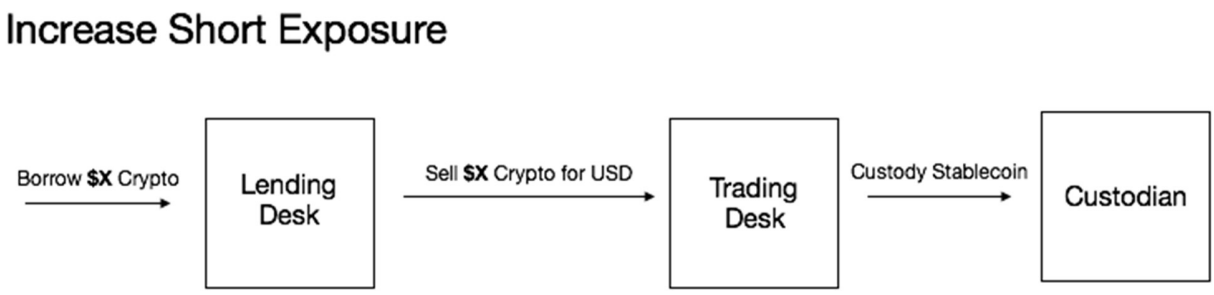
In order to mitigate the Product from eroding with crypto price swings and under/over-leveraging itself, we implement a Daily Rebalance and Threshold Rebalance mechanism to ensure a daily peg between the value of the Tokens and the relevant Reference Asset. For an example of how this impacts the Token Value of the Tokens please see the simulator available on the Issuer' website.

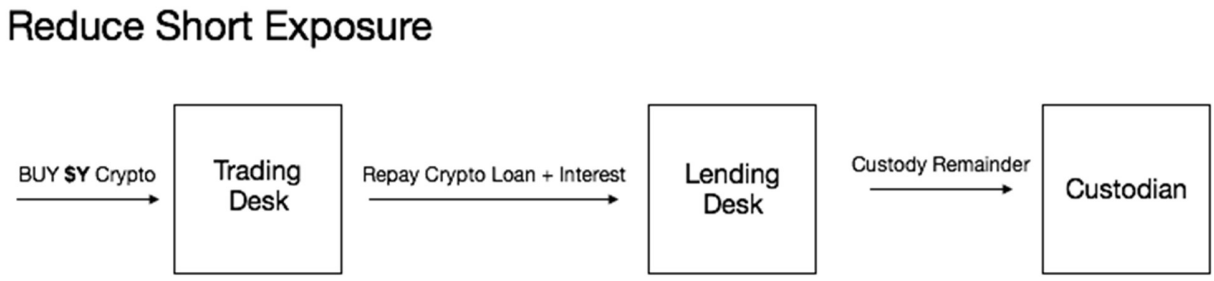
Rebalancing

To the extent that the Issuer has chosen to hedge the notional exposure of the Tokens, this rebalance would also need to be carried out to such hedged positions. During a rebalance, the Jasper *Trading Engine would* engage in one of two actions: 1) increase exposure or 2) decrease exposure.

For -1x Products:

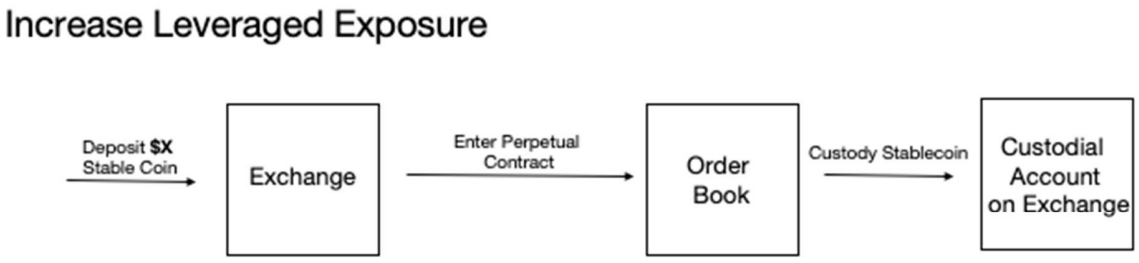
When the dollar denominated spot price of the crypto increases, the J*TE* decreases short exposure by repaying a portion of the outstanding loan. Similarly as the spot price decreases, the J*TE* increases short exposure by increasing the loan position. These workflows are illustrated below.

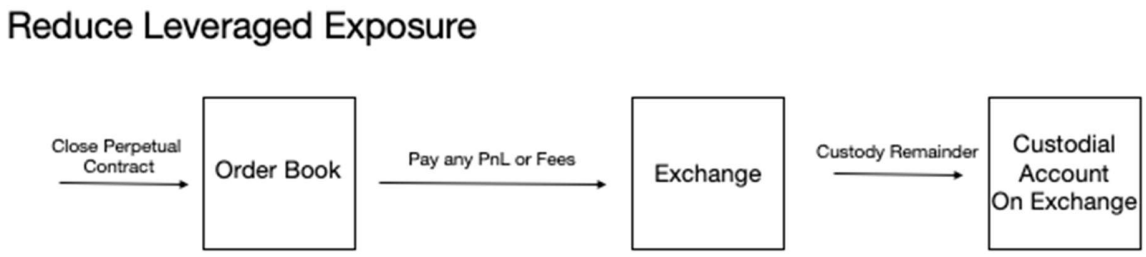




For Leverage Products:

In a 3x Leveraged Product, when the dollar denominated price of the crypto increases, the J*TE* increases exposure by increasing the notional of the perpetual contracts. Similarly as the spot price decreases, the J*TE* decreases exposure by decreasing the notional of the perpetual contracts. These workflows are illustrated below.





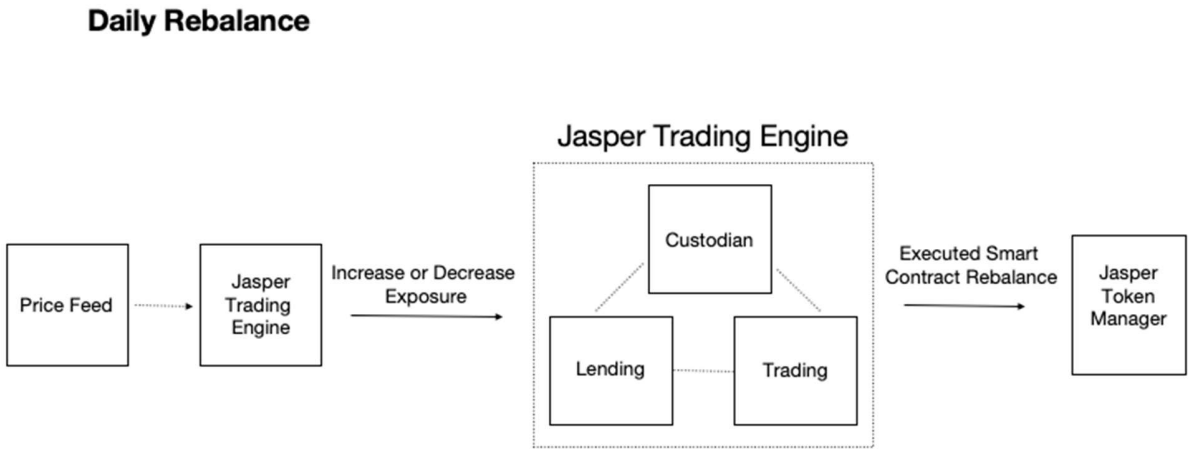
Daily and Threshold Rebalance

A rebalance will be ordered by the J*TE* during two events: 1) starting at 5pm CET during a Daily Rebalance or 2) a price change of 30% within a 24hr period, i.e. a Threshold Rebalance. Both rebalance types follow similar workflows, as detailed below:

1. J*TE* listens for the Time or a Threshold Price to be reached.
2. J*TE* reads the Crypto Price Feed and decides to either increase or decrease short exposure.

3. *JTE* executes the rebalance function on the Jasper Token Manager (on the Ethereum Blockchain) to reflect the rebalanced value of the Tokens.

Below is an illustration of the rebalance workflow and the different technical components involved in the rebalancing process.



System Stability

In order to keep the system stable, we must insure against over/under leveraging and issues in oracle communication. In doing so, we define strict user roles and safety checks using Multisignature Wallet.

Smart Contract User Roles

The Token Smart Contract System designates four classes of users that are allowed to interact with the Token feature set. The roles and their responsibilities are as follows:

1. **Contract Owner (Multisignature Wallet):** Able to upgrade, pausing, and shutdown the Token Smart Contract System.
2. Issuer **(Bridge):** Approves minting/burning of tokens, initiates rebalances, and adjusts stablecoin holdings
3. **Authorised User:** Whitelisted address to MINT OR BURN tokens through Jasper Token Manager.
4. **HODLER:** Token holder without the ability to directly MINT OR BURN within the Smart Contract System.

These user roles are subject to change as upgrades are initiated by the **Contract Owner.** While the Issuer is currently Amun, the contract has been designed to work for a range of issuers and any issuer may choose to hedge their exposure directly or appoint a third party to do so on their behalf.

Multisignature Abilities

In order to ensure 24/7 uptime, the signing capabilities for the **Contract Owner Multisig** are distributed across the Amun team and split across time zones. The Contract Owner plays a pivotal role in enforcing that the token operations run smoothly and as expected. Besides its role in upgrading, pausing, or shutting down the smart contract system, the Contract Owner serves several other purposes such as.

1. Fulfills Delayed Settlements within 24 hours of successful Burn Order Placement
2. Able to reset values such as order or rebalance metadata in the Persistent Storage Smart Contract
3. Able to set a whitelisted address, remove previously whitelisted addresses, and update an old address to a new whitelisted address.
4. Able to mint or burn tokens from a user's address. This is only used in extreme cases where a user may have violated our Terms of Service, the Terms and Conditions of the Tokens or as required by applicable laws - please see the Terms and Conditions of the Tokens for the full list of circumstance in which the Issuer may instigate a forced burn or transfer of Tokens.

Fees

There are two types of fee associated with the Tokens:

Mint and Burn Fee: Charged on each MINT OR BURNorder initiated by an Authorized User.

Fees deducted from the value of the Tokens each day. :

1. **Leverage Cost:** A daily rate accrued on the outstanding value of the tokens collected during a daily rebalance and reducing a holders notional exposure. In leveraged products, this appears as a funding rate fee.

2. **Maintenance Fee:** An annual maintenance fee collected each day during the daily rebalance.

Calculating Token Value

The calculation of the value of the Tokens can be done in accordance with the formal set out in the Terms and Conditions applicable to Tokens of a particular type.

In addition, when the Issuer is hedging the notional exposure of the Tokens, it will also be able to value the Tokens at any point based on the value of the peg at the last rebalance. This value can be calculated using the following formula:

For -1x Tokens:
Token Value at time R = Cash Value - (Reference Asset Exposure)(Reference Asset Price)

For Leveraged Tokens:
Previous Token Value + (Change in Reference Price – Leverage Fee)* (Notional Amount)

At any time intra-rebalance the value can be calculated as the % change in the price of the Reference Asset less fees. Alternatively, users can also recalculate the peg value using the above formula substituting the current price of Reference Asset.

The data for these values can be found through the Tokens, as part of the contract or from a dedicated end point.