XEN CRYPTO

Fair Crypto Foundation

(Litepaper v1.7, Jack Levin)

XEN - CryptoCurrency For the masses

General

What is the mission of XEN?

XEN aims to become a community building crypto asset that connects like minded people together. If you are a seasoned OG or simply Crypto curious, XEN has the lowest barrier to entry through its unique tokenomics.

Fair Crypto Foundation is designing XEN as a universal cryptocurrency to achieve the original mission of Blockchain, following the Blockchain Tenets of decentralization, transparency, counterparty risk resistance, peer-to-peer value exchange and self-custody. Its unique tokenomics focuses on the mass market adoption with the lowest barrier to entry compared to the rest of coins on the market today.

What problem does XEN solve?

Today's crypto world exists on a very bipolar plane, namely, the well known cryptocurrencies are overbought (pumped) and subsequently sold off (dumped). The unknown cryptocurrencies are often left undiscovered for a long time by general investors while suffering from pre-mining and whale accumulation by the founding teams. XEN aims to solve both problems through a fair launch.

Tokenomics and Philosophy

What makes XEN unique?

Simplicity - XEN is (will be) based on the ERC20 token standard with a minimum amount of code. There are no pre-minting, hidden doors, admin keys, or origin (OA) wallets. All XEN ecosystem participants mint their own coins using their own ethereum compatible wallets.

XEN cryptocurrency is Free as it does not require participants to deposit any funds to start minting their XEN crypto.

XEN starts with zero supply and will only be minted by the participating community.

XEN does not have a maximum cap on the supply, is inflationary in the beginning, becoming disinflationary as adoption increases.

XEN is a digital asset which has no backing by investors or starts with any intrinsic value.

XEN is immutable, and can not be changed or stopped by anyone. With its open source code it is truly trustless through consensus and belongs to the people.

XEN does not have a controlling or management team, it is simply a segment of an immutable code secured by the Blockchain.

XEN is neither a proof of stake or proof of work token, however it is a *Proof of Participation* (PoP) crypto. Whoever participates in XEN creation has full rights of ownership through self custody.

XEN smart contract uses a fair system of new token distribution. All participants are subject to the same immutable rules secured by Blockchain.

XEN continuously manages token rewards through minting based reward time locks and the total number of participants.

Generally, all crypto currency must be purchased or exchanged with other cryptocurrencies on the open markets. XEN does not require purchasing as anyone on the Ethereum network can mint their own XEN tokens by connecting their compatible crypto wallet (such as Metamask, etc).

What is the formula to generate rewards for the participants?

XEN tokenomics have no locking or staking of any assets, only your wallet is required. The process to generate XEN is based on several variables. First, your intention to receive XEN must be initialized by connecting your wallet to the XEN smart contract, you will be asked how long you are willing to wait (in days) to receive XEN. The smart contract will generate and provide a XEN rank (cRANK), which is based on how many people interacted with the contract before you. The final formula to receive (mint) XEN is the LOG base2 of the current Global XEN rank minus your rank, multiplied by days you have specified during the first interaction with the smart contract and by two amplification factors, AMP and EAA, detailed below.

If XEN has no cap, does it mean it has no value?

XEN has no cap, however as more and more people join and participate in minting, it will be harder to generate (or mint) more XEN due to naturally sloping adoption curve which is logarithmic in nature. This will make XEN tokenomics disinflationary in nature.

Each participant makes it harder for new participants to receive rewards, unless new participants extend the amount of time to get their rewards. This is similar to Bitcoin mining difficulty.

Does XEN have an initial supply?

XEN has no initial coin supply. Supply is generated by all people that participate in the *Proof of Participation* (POP) protocol through minting of their own coins.

Why will XEN appreciate in value?

XEN token's value is pegged to the difference between world's inflation vs built-in distribution of the tokens. In short, the value of XEN is linked to its difficulty to be minted, which is very similar to Bitcoin. Ultimately, the value is created by the market forces of all participating parties. As more market participants get involved in generating XEN, the total amount of generated XEN drops (disinflation) and is distributed between participants making XEN more scarce and valuable. The only way to mint more XEN in the future, will be by extending the time one has to wait to receive the mint.

Is there a way to increase rewards?

XEN rewards are loosely based on game theory with several variables that influence the reward outcome. To mint new XEN coins, one must generate their Crypto Rank (cRank).

Your cRank is a natural number, representing the relative standing across the XEN ecosystem. For example, a cRank of 5,000 represents the fact that 4,999 people before you have decided to mint XEN for themselves and have submitted their claimRank transactions before you did. XEN smart contract tracks a Global cRank within the ecosystem and increases every time someone else joins as a participant and generates their cRank.

Your end Reward (R_u) is computed by multiplying the difference between your rank cR_u against the Global cRank cR_G, multiplied by the number of Mint Term days (T), by time-dependent Reward Amplifier (AMP) and by an Early Adopter Amplification factor (EAA):

$$R_u = \log_2(cR_G - cR_u) * T * AMP(ts_0) * (1 + EAA(cR_u)),$$

where

$$AMP(ts_0) = \max(3,000 - \lfloor \frac{ts_0 - ts_G}{3600 * 24} \rfloor, 1),$$

decreasing in a linear fashion from 3,000 by 1 every day, until it reaches 1 and stays equal 1 thereafter (ts_0 is timestamp of claimRank transaction, and ts_G is Genesis timestamp, both - in seconds), and

$$EAA(cR_u) = \max(0.1 - 0.001 * \lfloor cR_u/100,000 \rfloor, 0),$$

where EAA starts from 10% and decreases in a linear fashion by 0.1% per each 100,000 increase in Global Rank.

Composition of end Reward is shown on the diagram below.

$$\text{reward} = AMP * T * \log_2(dR) * (1 + EAA(cR_u))$$
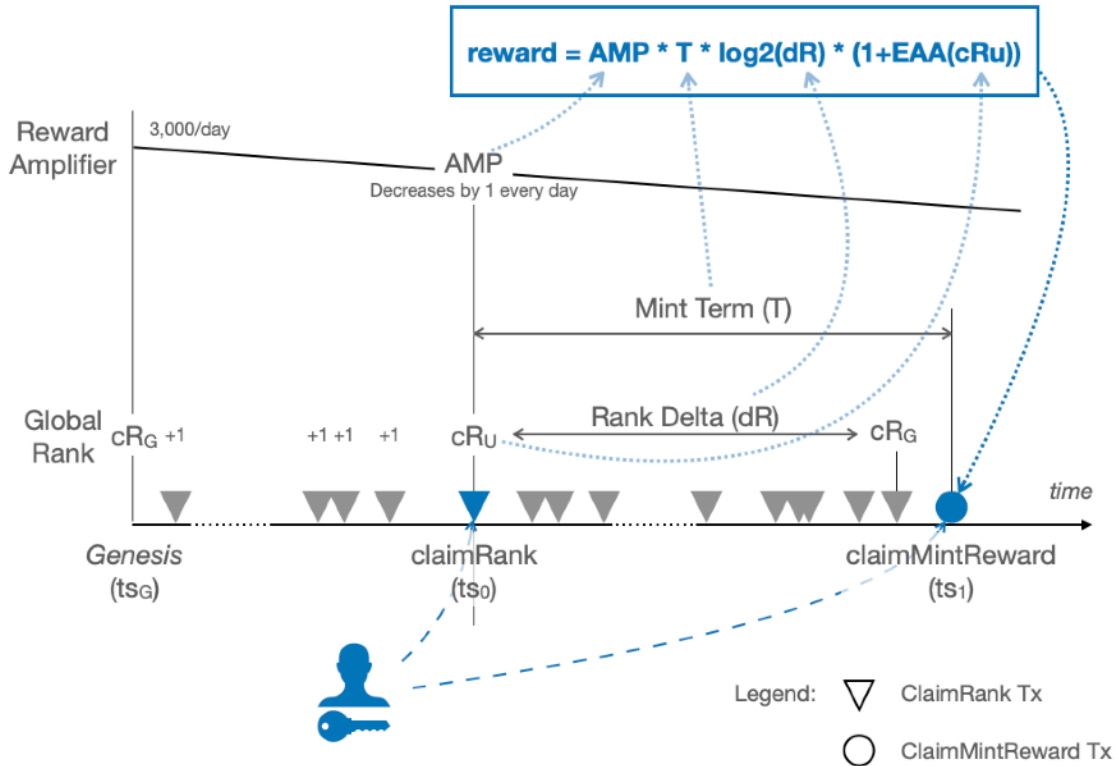
So in order to increase your rewards, one must indicate the maximum number of days they are willing to wait for their rewards. Likewise, inviting new people to join the network will create more rewards for all of the participants (including the invitees).

Term limits

Term limits (in days), are set to follow total activity of Proof of Participation protocol. Specifically, the maximum Free Mint Term is capped to 100 days until the protocol registers more than 5,000 unique participant addresses as tracked by Global Rank. The term will start increasing logarithmically as more participants join the protocol, using the following formula:

$$\texttt{freeMintTermLimit} = \begin{cases} 100, & \text{if } cR_G \leq 5000 \\ 100 + log_2(cR_G) * 15, & \text{if } cR_G > 5000 \end{cases}$$

where

cR_G is the current Global Crypto Rank

as shown in the chart below:
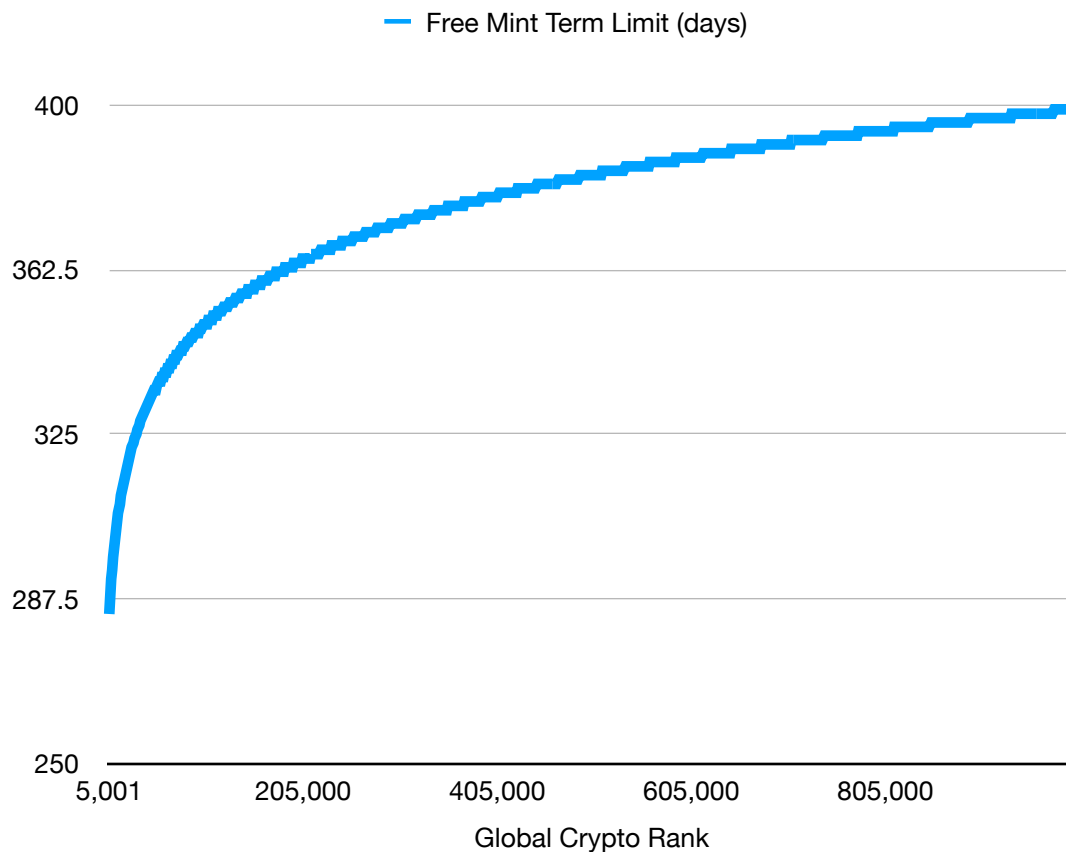
What is the process to mint XEN after the established term (in days)?

You will be able to visit XEN's web3 web panel where you should be able to check how many days are left before you can claim / mint XEN.   Generally,

you should be able to claim / mint within 24 hour period after the end date, however XEN rewards will be progressively reduced if you do not claim / mint XEN close to the date of the term you've established.   The reason for progressive reduction is to avoid bad actors that create ladders of "invisible" claims, and then claim all at once to crash the value of XEN.   The penalty for not claiming/minting XEN is progressive, becomes 99% after 7 days (a Reward Claim Window) and stays at 99% indefinitely thereafter. This incentivizes users to do Reward Claims even if the window is over and cleans up expensive blockchain storage space.

Days Late	Penalty, %
0	0
1	1
2	3
3	8
4	17
5	35
6	72
7	99

Staking XEN

The staking period is limited to the following range: 1 to 1,000 days.

XEN staking period can be terminated without penalties any time within the agreed term; however the APY rewards will not be prorated or paid if staking is terminated before the staking period is over.

You will be able to stake XEN for any number of days between 1 and 1,000, and receive APY rewards, which will start at 20% on XEN Genesis and will decrease by 1 percentage point every 90 days thereafter until it reaches 2%, whereupon it will stay at 2% indefinitely. Each stake's APY is fixed at the time of the stake, depending on how many days have passed since XEN Genesis.

Stake start (days since Genesis)	APY, %

0	20
90	19
180	18
270	17
360	16
450	15
540	14
630	13
720	12
810	11
900	10
990	9
1080	8
1170	7
1260	6
1350	5
1440	4
1530	3
1620	2
after	2

Here is how the whole process works:

- First, claim your CryptoRank with Proof of Participation (PoP)

- Then, claim/mint your XEN crypto

- After that, stake XEN for APY rewards.

So, if you are staking 100,000 XEN for 365 days within the first 90 days since XEN Genesis, you will be able to claim 120,000 XEN after this period. The stake reward amount is based on non-compounding APY and will be calculated using this formula:

$$R_u = \frac{S_u * APY * t}{100 * 365},$$

where

$S_U =$ amount of staked XEN,

$$APY = \max(20 - \frac{dt_G}{90}, 2),$$

$dt_G =$ days since Genesis

Internally, the smart contract will burn staked XEN to reduce Total Supply of XEN crypto, recording the debt to the original stakeholder. Smart Contract will re-mint the original stake XEN crypto together with extra 20% rewards as newly minted XEN.

Can interested parties buy or sell XEN crypto?

Anyone can buy XEN tokens by using any number of popular distributed exchanges (DEXes), such as Uniswap or Sushiswap. Selling or trading XEN tokens will be possible on the same exchanges.

What can I do with XEN crypto?

Anything you can do with ERC20 token, you can do with XEN. Trade it for other crypto tokens or NFTs, tell your friends about it, play with the Uniswap ecosystem by creating Limit orders or Liquidity Pools to automatically trade your XEN crypto. At the end of the day, XEN strives to achieve the maximum liquidity though maximum adoption, so holders of XEN crypto are invited to give it away to as many people as possible.

Technology

Does XEN crypto run on its own blockchain?

No, XEN is deployed on the Ethereum mainnet, the second largest blockchain network in the world, with a peak market cap of $570Bn. XEN is open source and modeled as ERC-20 token (fungible token standard) on Ethereum.

The cause of it all

The crypto world has come a long way since Timothy May in 1988 wrote "the Crypto Anarchist Manifesto, where he introduced the basic principles of crypto-anarchism, encrypted exchanges ensuring total anonymity, total freedom of speech and total freedom to trade (LINK).

In 2008 Satoshi Nakamoto wrote *Bitcoin: A peer-to-Peer electronic Cash System*, and for the first time introduced a system that would allow a pure peer-to-peer version of electronic cash to be sent directly from one party to another without going through a financial institution (LINK).

But just like the internet has clustered into centralization by tech giants, we can see the trend within DLTs not escaping human nature of corruption and deceit. We see governments wanting to introduce their own versions, so called CBDCs. We see corporations claiming to be pro crypto but using every way possible to lure you into giving up your keys, and in doing so violating the true first-principles of crypto. Both create filter bubbles of innovation.

The L1 narrative emerged where multiple systems are competing to become the most fundamental and interoperable. Although there are local maximalist convictions - there is no widespread consensus as to which system that ultimately will prevail. And as long as that is the case the necessity to go back to the roots of first principles is inevitable.

XEN goes back to the roots of consensus making systems and takes a carte blanche approach to innovation.

Pure innovation tends to always come from the people - for the people. Based on first principles.

Glossary

Terms used in Litepaper

CryptoRank (cRank, cR_U) - a unique number assigned to any Ethereum address which submits successful claimRank transaction.

Global CryptoRank (cR_G) - current value of global XEN variable which is increased monotonously incrementing by 1 with each successful claimRank transaction, a measure of power of XEN network.

Genesis Time (ts_G) - timestamp of XEN Smart Contract instantiation on Ethereum blockchain (derived from block.timestamp in constructor)

Reward Amplifier (AMP) - time-dependent constant, decreasing every day after Genesis Time. At a time of a claimRank transaction, then-current AMP is recorded on chain and is used in calculation of Reward at a time of a pairing claimReward transaction.

Mint Term, or Maturity (T) - a minimum time difference (measured in full days) between the initial claimRank transaction and subsequent claimReward transaction. This parameter is submitted by user during claimRank transaction and is recorded in XEN Smart Contract.

Early Adopter Amplifier (EAA) - an extra incentive rate for the earliest adopters of XEN, which starts at 10% at the Genesis and then decreases by 0.1 percentage points every time Global Rank scores another 100,000.

Free Mint Term - a maximum Mint Term (Maturity) value that user can choose when submitting claimRank transaction. Free Mint Term starts at 100 days and stays constant until Global cRank reaches 5,000. After that, Free Mint Term is calculated as $100 + \log_2(cR_G) * 15$.

Reward Claim Window - a maximum amount of time (measured in full days), during which a user is allowed to submit claimReward transaction and mint XEN tokens. Reward Claim Window starts at the time of claimRank transaction PLUS Mint Term (or Maturity), as recorded in XEN Smart Contract.

As Reward Claim Window starts, a Withdrawal Penalty is calculated in a progressive fashion, increasing each full day (Penalty is 0% for the first 24 hours of Reward Claim WIndow) until it reaches the maximum value of 99%.

APY, Annual Percentage Yield - is a non-compounding annualized return on the XEN stake. APY is set programmatically by XEN smart contract; it starts with 20% and is decreased by 1pct. Point every 90 days until it reaches the terminal value of 2%.

XEN Smart Contract Public Interface

claimRank(uint256 term) - executes transaction claiming user's CryptoRank and creating a mint record, which captures CryptoRank, Mint Term (*term*), Maturity timestamp (current timestamp + term in seconds) and current Reward Amplifier. *Term* is expected to be in the range of 1…Free Mint Term. Transaction will revert if a mint record already exists for current users' address.

claimMintReward() - executes transaction ending Mint Term and claiming (minting) user Reward (XEN tokens) (possibly decreased by Penalty amount; see Reward Claim Window). Transaction will revert if: (1) no mint record is found for a user, (2) Mint Term is not yet over.

claimMintRewardAndShare(address other, uint256 pct) - executes transaction ending Mint Term and claiming (minting) user Reward (XEN tokens) (possibly decreased by Penalty amount; see Reward Claim Window). Minting proceeds are split between the owner and a designated *other* address (The *other* will receive *pct*% and owner will receive 100%-*pct*% of net due reward amount). Transaction will revert if: (1) no mint record is found for a user, (2) Mint Term is not yet over.

claimMintRewardAndStake(uint256 pct, uint256 term) - executes transaction ending Mint Term, staking the *pct* of the net reward amount (possibly decreased by Penalty amount; see Reward Claim Window) for *term*, days and claiming (minting) minting the balance as XEN tokens. Transaction will revert if: (1) no mint record is found for a user, (2) Mint Term is not yet over, (3) Active Stake exists for the user.

stake(uint256 amount, uint256 term) - executes transaction staking *amount* of XEN for *term* days by creating a Stake record in Smart Contract, which

captures the stake parameters, Maturity timestamp (current timestamp + term in seconds) and current APY. *Amount* is any number from 1 and up to the total current user XEN balance. *Term* (in days) is any number from 1 to 1,000. Transaction will revert if a stake record already exists for current users' address.
*N.B.: **stake** transaction burns amount of XEN tokens until user withdraws stake.*

withdraw() - executes transaction to withdraw amount of XEN previously staked plus calculated rewards. Stake rewards depend on stake amount, stake term and the APY pro-rated by the term against 365 days. Stake could be withdrawn at any time without any penalties. If withdrawn before reaching stake maturity, a user receives the full amount of their stake with *zero* rewards. If withdrawn at any time upon reaching stake maturity, the user receives the full amount of their stake PLUS calculated APY reward. Transaction will revert if: (1) no matching stake record is found
*N.B.: **withdraw** transaction mints original amount of XEN tokens staked plus any reward XEN tokens due.*

burn(address user, uint256 amount) - executes transaction to burn *amount* XEN for *user* address. This transaction is to be called by a smart contract which implements IBurnRedeemable interface and is able to receive a callback to a function *onTokenBurned,* confirming that the XEN tokens have been burned. This opens an interface to integrate with XEN smart contract and exchange XEN for some other token.

getUserMint() - returns MintInfo record for the current users' address, if any.

getUserStake() - returns StakeInfo record for the current users' address, if any.

getGrossReward(uint256 rankDelta, uint256 amplifier, uint256 term, uint256 eaa) - returns calculated gross reward for specified parameters.

getCurrentAMP() - return current AMP value.

getCurrentEAAR() - return current EEA rate value.

getCurrentAPY() - return current APY value.

getCurrentAPY() - return current APY value.