

RelayChain Bridging DeFi

White Paper Version 1.1
August 2nd, 2021

BLOCKCHAIN TECHNOLOGY IS RAPIDLY EVOLVING, AND MANY MORE CHAINS WILL BE CREATED IN THE COMING YEARS. IT IS IMPORTANT TO RECOGNIZE THAT BRIDGE SERVICES WILL PLAY A KEY ROLE IN TRANSPORTING ASSETS BETWEEN POPULAR BLOCKCHAINS AND ENABLING SPECIALIZED BLOCKCHAINS TO INTERCONNECT.



WHAT IS RELAY?

Relay allows traders to reach many markets simultaneously by integrating cross-chain swaps into popular DEX, CEX, dApps and wallets, bringing new arbitrage opportunities and increased exposure to lucrative trades. For the rest of us, Relay means we can move crypto between blockchains with simplicity, security and speed, making cross-chain DeFi accessible to the masses. Because Relay is a service, you might not even know you're using it, yet Relay is the premiere bridge of DeFi, unifying the decentralized world and rewarding the holders who help.

Table of contents

Relay Background: (TL;DR)	4
DEFI 2020 - Multiple Chains, One Zero Exchange	4
DEFI 2021 - Multiple Exchanges, One Relay Bridge	5
<hr/>	
Cross Chain Swaps and Arbitrage Explained:	5
From Wallet, to Relay, and back again. (About Decentralized Swaps)	6
DeFi arbitrage opportunities increase the efficiency of crypto-markets	6
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The Relay Model (BaaS):	7
Bridging as a Service (the RELAY model)	7
Cross-chain transactions using native token liquidity	8
The Relay Chain	9
<hr/>	
The Relay Ecosystem:	10
A Complete DeFi Bridge (security, speed, insurance, ticketing, single-sided-staking, stable-coin pools & liquidity)	11
BaaS and Technical Partners	11
Insurance & Security Audits	12
<hr/>	
The Revenue Architecture:	12
A positive feedback loop between price & utility	12
Estimating the Cross-Chain Market	13
Because Math (the network effect of bridging multiple chains)	13
Monthly Bridge revenue simulation	15
Monthly Liquidity Pool revenue estimates	16
<hr/>	
The Tokenomics:	17
\$RELAY allocation	17
\$RELAY vesting details	17
\$Zero-to-\$RELAY proportional swap details	18
<hr/>	
The Future:	18
Roadmap	18

Relay Background (TL;DR)

Q1 2020 - Multiple Chains, One Zero Exchange

Toward the end of 2020, it became clear that Ethereum would not be the only smart-chain powering DeFi. For all of the innovation that Ethereum delivered, the high fees, slow transactions, and frequency of failed trades crippled DeFi participation. Users began seeking solutions to Ethereum's outdated performance on 3rd generation blockchains (e.g. Binance Smart Chain, Avalanche, Polygon, Solana, Fantom, Cosmos, etc.).

Unfortunately, each of these new blockchains was an island, isolating user value and reducing trading opportunities. Consequently the demand for all tokens to be accessible between all blockchains became one of the largest problems in crypto. DeFi participants needed the ability to move capital between chains with ease, security, and speed.

Enter Zero Exchange: a multi-cross-chain DEX with liquidity mining that seamlessly integrates an IDO platform for DeFi project launches. Zero Exchange was successfully bootstrapped by an anonymous development team that invested 60 of their own ETH as the initial liquidity. Within months the project was growing fast and leading the cross-chain gold rush, being the first to:

- ❖ Build a DEX on the Avalanche chain.
- ❖ Build a bridge between the Ethereum and Avalanche chains.
- ❖ Build a bridge between the Avalanche and BSC chains.
- ❖ Build a bridge between Avalanche and Polygon chains.
- ❖ Build a bridge to Kusama/DOT parachains in partnership with Moonbeam.
- ❖ Integrate Zero with ChartEx giving users high-performance charting.
- ❖ Establish partnerships with MoonBeam, ChartEx, Chainlink, Web3API, Bridge Mutual, and Kairon Labs.

Even while Zero Exchange was successfully connecting ETH, MATIC, AVAX, and BSC (with 70mil TVL and over 1bil in transactions), the crypto market promptly crashed. It became obvious Zero's liquidity farming and IDO launches would not support growth in a bear market. A higher utility business model was needed.

Q2 2021 - Multiple Exchanges, One Relay Chain

Zero Exchange recognized they could quickly capitalize on their strongest asset: cross-chain bridging, thus becoming the first “Bridging as a Service” (BaaS) provider. This pivot demanded a rebranding and a new tokenomics model, as the team realized that *a positive feedback loop could be established between liquidity, volume and the bridge's native token value.*

On August 2nd, 2021 Zero Exchange became Relay with a 100:1 proportional token swap honoring all Zero Exchange holders without incurring dilution or inflation of their relative amounts. See the Tokenomics section for more details.

This pivot to Bridging as a Service allows dApps, Decentralized Exchanges and even Centralized Exchanges to use Relay to seamlessly provide their users with cross-chain swaps. Because the BaaS model is new, Relay has both the first mover and structural advantages (having already built the technology and tested it on Zero Exchange for almost a year). Further, by incorporating Relay into DeFi applications, adoption is virtually frictionless.

Cross Chain Swaps and Arbitrage Explained

As more and more blockchains are operational, there is an unprecedented demand to move capital efficiently from chain-to-chain. Bridges are paramount to solving the issue of fragmented liquidity across chains.

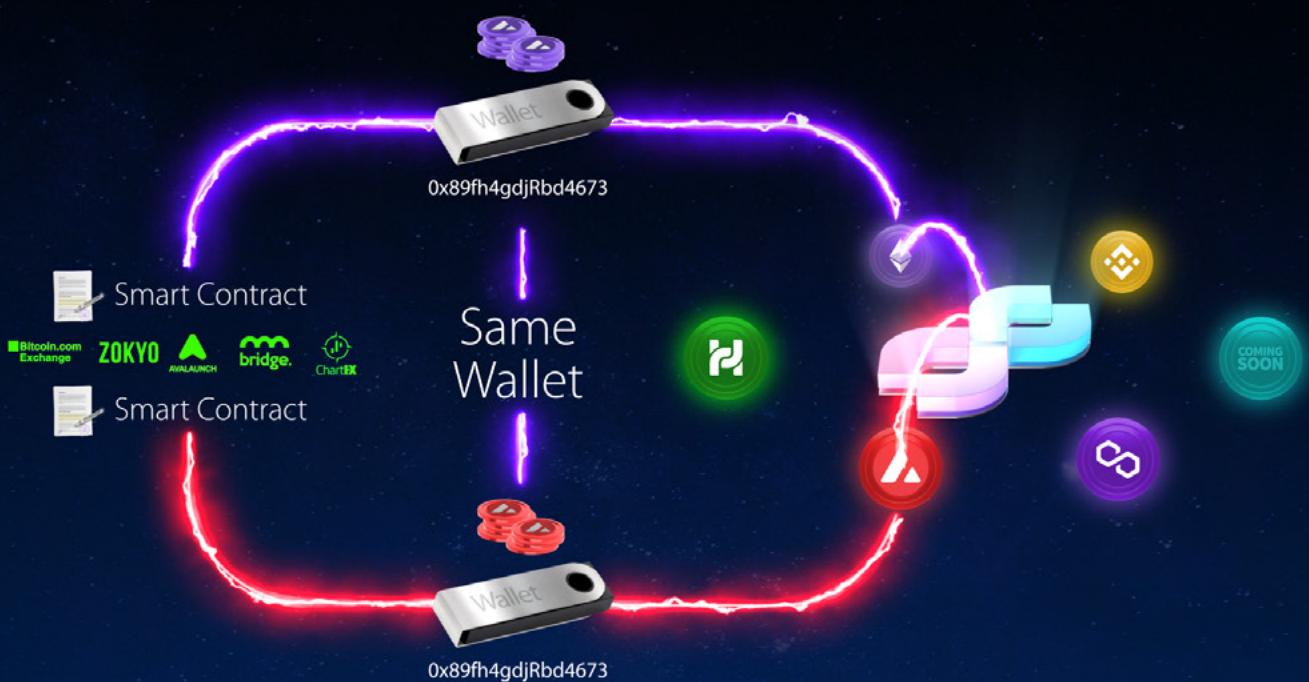
Cross-chain swaps enable tokens to be transferred from one blockchain to another without [ledger-entry] conflicts between chains, ensuring that transaction value remains the same. A “bridge” that carries out cross-chain transactions needs to be secure and fast to have utility for DeFi.



Cross Chain Swaps and Arbitrage Explained



To accomplish cross-chain transfers a user wallet sends tokens to the Relay bridge contract. The bridge contract accesses (liquid) Relay tokens on the target chain and swaps them for the desired token asset, which is then sent to the trader's wallet address.



Cross-chain arbitrage is a less risky trading strategy that involves purchasing assets that are undervalued on one blockchain and quickly selling those assets on another blockchain where the asset value is priced higher. In general terms arbitrage allows markets to equalize the price of goods between regions so that the markets truly represent "fair value" of the assets.

Arbitrage Opportunity



Cross-chain bridging produces a situation where native assets from Ethereum move to Avax or BSC and are subject to different supply and demand pressures, creating arbitrage opportunities. The fastest bridge will attract the most trading volume because it enables the most successful arbitrage trades. *Because of its speed, RELAY offers new arbitrage possibilities to traders wanting to access price discrepancy between blockchains, decentralized exchanges and dApps.*

The RELAY Model

(Bridging as a Service)

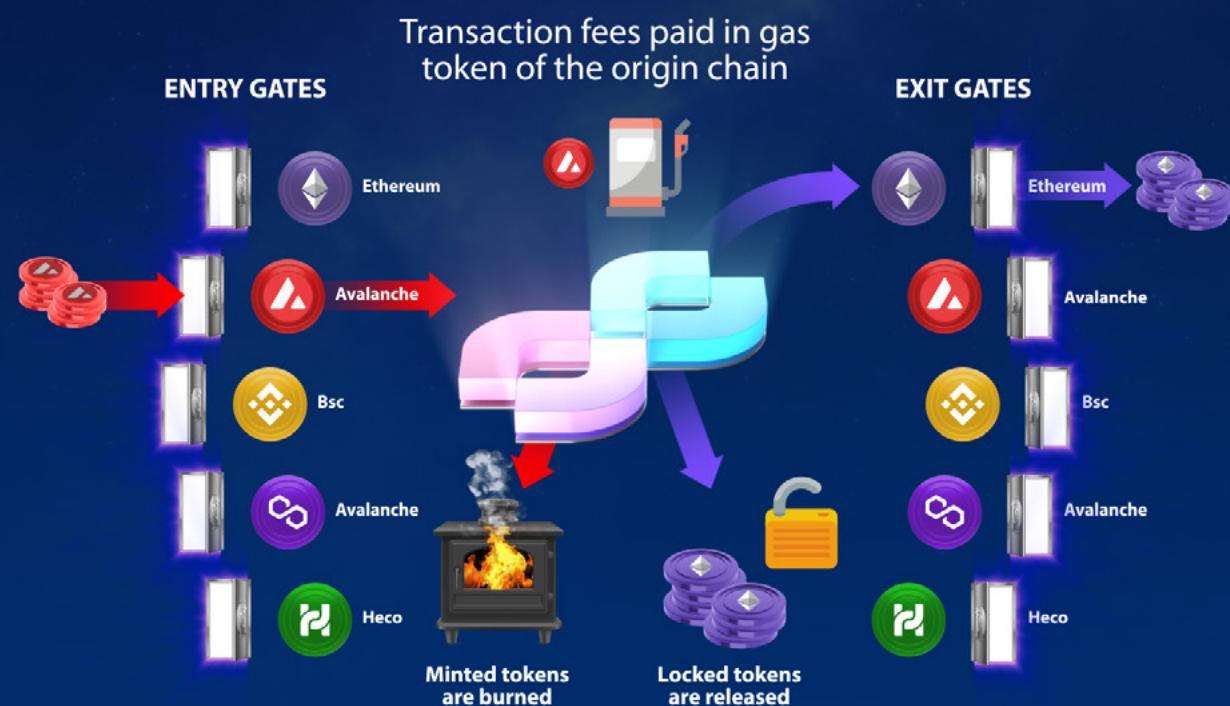
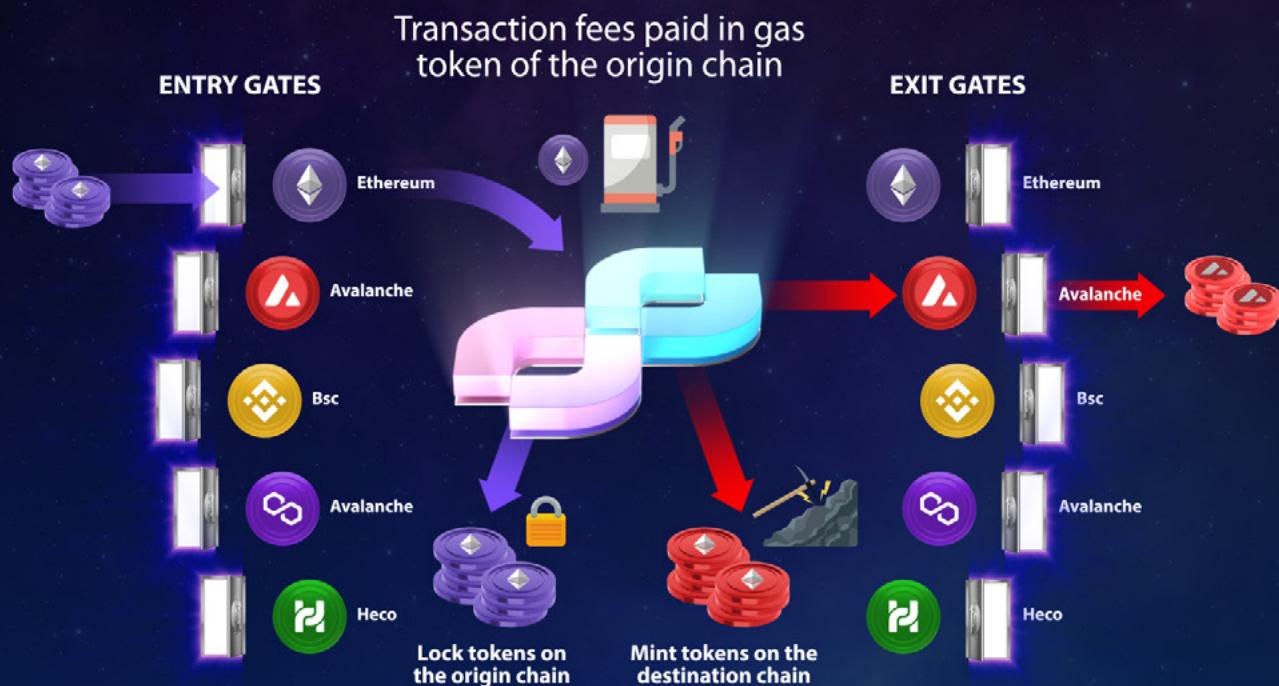
Blockchain technology is rapidly evolving, and many more networks will be created in the coming years. It is important to recognize that bridge services will play a key role in transporting assets between popular blockchains and enabling specialized blockchains to interconnect.

Relay offers a seamless bridge that operates across a growing list of smart chains where it is being integrated directly into native DeFi applications, dApps, and DEXs. This is Bridging as a Service (BaaS).



Nodes on the Relay network quickly and securely shuttle transactions between different blockchains. **Because the Relay API is built for seamless integration into dApps and DEXs, any trading platform can adopt Relay and immediately provide cross-chain opportunities to its users.**

Cross-chain transactions use \$RELAY token liquidity



The Relay Chain

Relayer nodes enforce the conditions required for successful cross-chain transactions (wallet, number of tokens minted, burned, locked & unlocked).

To increase the Bridge's security through decentralization there are multiple Relayers. Each transaction is sent to all the available Relayers followed by a vote. If consensus is reached, the Bridge seeks finality for the transaction. This avoids rogue (compromised) Relayer nodes from diverting funds into a bad actor's wallet.



Voting system between the 6 relayers:

- ❖ Current threshold is 4/6 votes to confirm a cross chain transaction

Objective:

- ❖ Validate the destination wallet: Avoid a “rogue” relayer diverting funds to a different destination wallet.
- ❖ Validate the amount of tokens to mint on the destination chain so that it exactly matches the amount of tokens locked on the origin chain.

Presently the Relay Chain includes five well-known Relayers — Bitcoin.com Exchange, Zokyo, ChartEx, Avalaunch, and Bridge Mutual, all of which increase the Bridge's security and reliability.



Bitcoin.com
Exchange

ZOKYO

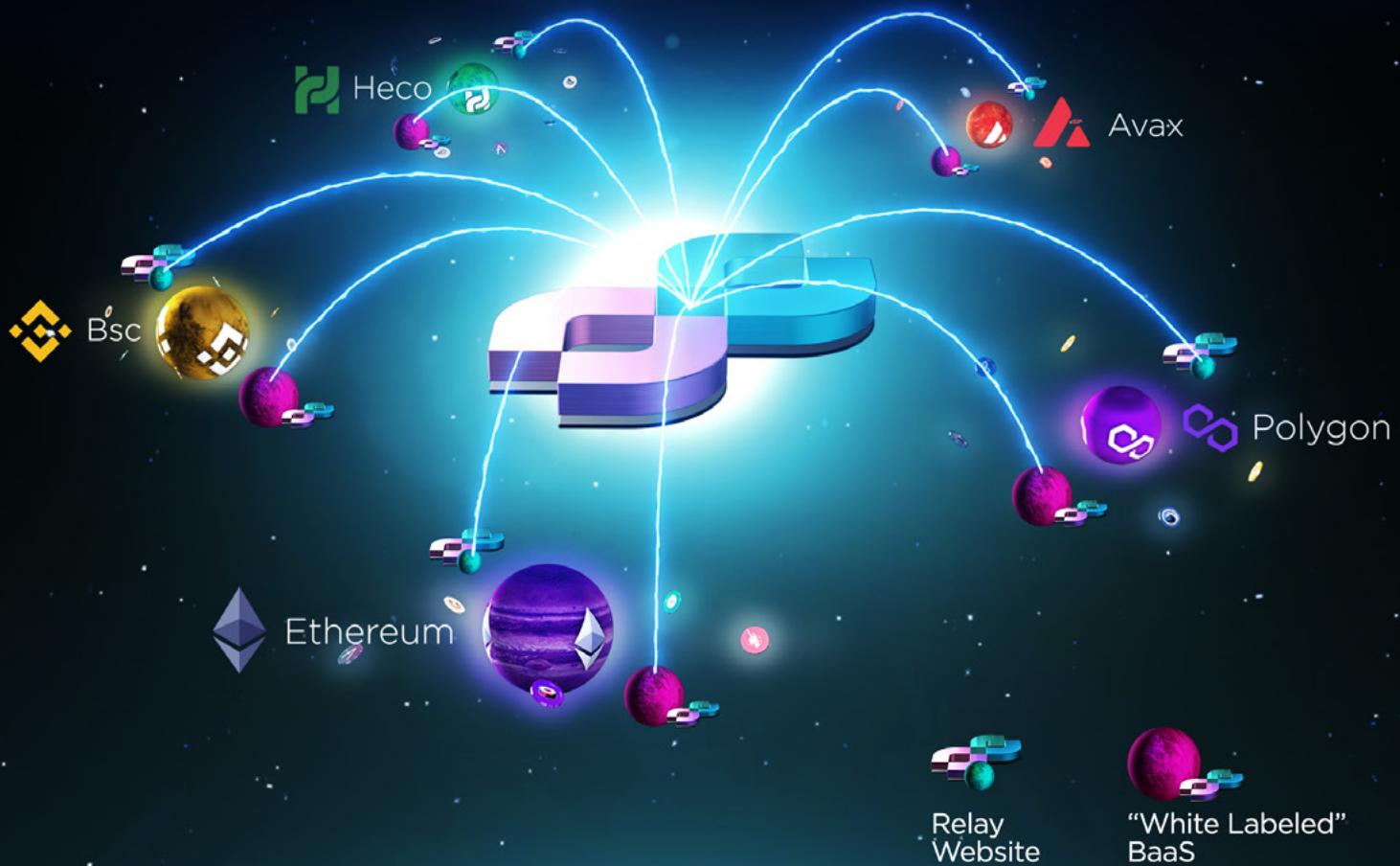
AVALAUNCH

bridge.

ChartEX

dApps and exchanges that use the Relay BaaS gain exposure to an ever growing number of bridged blockchains.

The Relay Ecosystem:



A Complete DeFi Bridge:

There are many moving pieces that must seamlessly work together to build a robust multi-chain bridge. Relay has them all:

- ❖ Fast and effective bridging technology that adapts to the changing conditions of each block-chain and automatically handles gas fees across all involved chains and wallets
- ❖ Bulletproof smart-contracts (audited first by Zokyo and more recently by Halborn)
- ❖ Tokenomics that enrich our partners, holders, and bridge users (\$RELAY)
- ❖ DEX liquidity partners ( Quickswap, )
- ❖ Native asset conversion (Gondola Finance)
- ❖ Insurance (Bridge Mutual)
- ❖ Ticketing and Support workflow
- ❖ Participating Community

BaaS Partners



Relay Chains



dApps



Technical partners



Insurance

The importance of Relay as a trusted bridge service connecting some of the largest players in DeFi underpins the need for insurance. Our partnership with Bridge Mutual brings on-chain insurance to cross-chain swaps making trades of all sizes safe and secure. Relay has jump started a collateral coverage pool with Bridge Mutual wherein users will be able to buy policies against the staked collateral at a small premium.

Security

All Relay contracts and code have undergone an extensive audit by the excellent team at Halborn Security, plus a previous audit performed by Zokyo in early 2021. The combined Relay dev team has more than 30 years experience in blockchain.

The Revenue Architecture:

TL;DR - \$RELAY holders earn Gas Fees from their staked \$RELAY while simultaneously experiencing an increase in the \$RELAY token value proportional to the volume of the bridged transactions and buyback rate.



A positive feedback loop

The team designed the Relay bridge to allow a positive feedback loop between the \$RELAY token price and the volume of rewards generated by the Bridge, meaning that as Relay becomes more popular, \$RELAY holders benefit both in increased rewards and increased market interest around holding \$RELAY. This is further compounded by the low supply of the \$RELAY token (only 10,000,000 Total Supply) which catalyzes accumulation and HODLing.

Without farming emissions to suppress \$RELAY price, there is practically no limit to its growth potential. Metcalfe's Law (wherein value increases hyper-exponentially with the number of participating nodes or networks) gives Relay an extreme first mover advantage backed up by its already proven structural advantages.

\$RELAY token holders can provide liquidity for cross-chain swaps and earn native gas fee tokens from each swap performed. This means that by holding and staking \$RELAY, the fees from AVAX, ETH, BNB, MATIC, HT, DOT, SOL, etc., are split among \$RELAY holders as rewards for providing the bridge liquidity. This is a new use of a Liquidity Pool which reduces risk to the provider and bypasses the difficulties of liquidity farming.

Is this even fair?

Yes.

Relay provides a high value service at low cost to DeFi users while driving its own positive feedback of price. Because liquidity (TVL) increases with the project's increased use, the bridge fees can be reduced to remain competitive with future bridging technologies. Interlocking this many reinforcing factors creates an upward value spiral:

More value = more liquidity = cheaper+better+faster swaps = more users = more value, and so on.

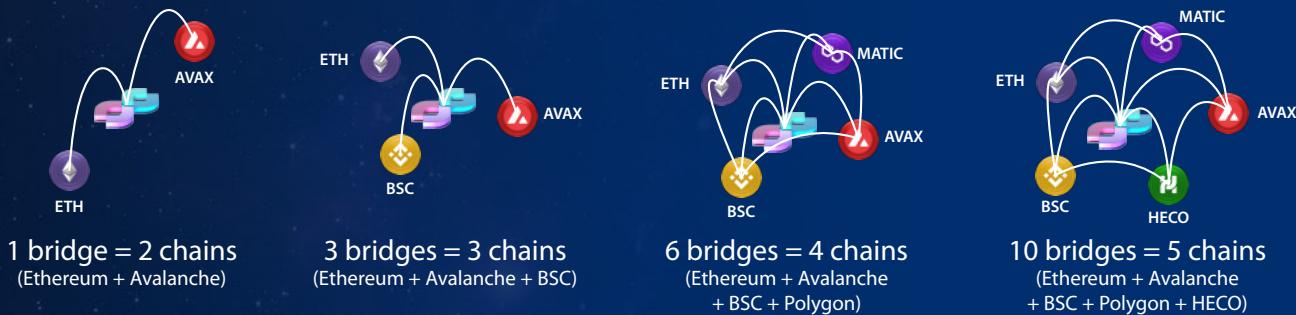
Estimating the Cross-Chain market:

The total revenue Relay can possibly capture is calculated from a percentage of the total bridge transactions occurring across all DEX and dApp projects linked to Relay. We cannot assume a competitor-free landscape will exist for very long, so our estimates of Total Accessible Volume (TAV) and captured revenue are conservative.

Because Math: Bridge count vs. Chain count

To understand the Volume of transactions within Relay, we must keep in mind there is a bridge for each connection between different blockchains. This means that a single bridge is a cross chain path between two blockchains. So the total volume of the RelayChain is a multiple of the total number of bridges running between chains. When a new chain is added to Relay, it bridges connections to all the existing chains which logarithmically increases the transaction volume and subsequent revenue potentials.

Illustrations shown below demonstrate how Relay transaction volume scales:

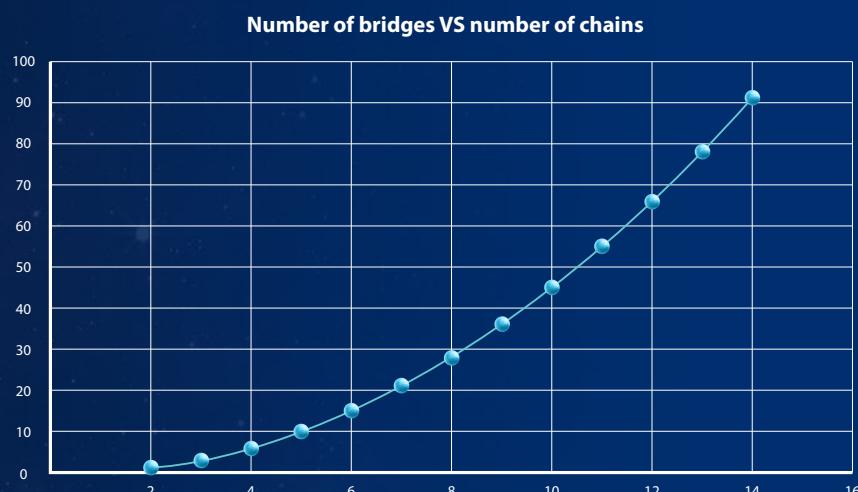


Equation to calculate the number of bridges as a function of the number of chains:

$$\text{Bridge total} = \frac{[n * (n - 1)]}{2} \quad (\text{"n" equals number of chains})$$

CHAINS	BRIDGES
2	1
3	3
4	6
5	10
6	15
7	21
8	28
9	36
10	45

The compounding relationship between the number of blockchains and the possible number of unique bridge combinations is shown below:



Estimating volume between 2 blockchains

2 chains = 1 bridge

Let's assume the following theoretical transaction volumes for all services cross chaining via the same two blockchains:

- ❖ 25 000 transactions/day
- ❖ Around 750,000 transactions/month

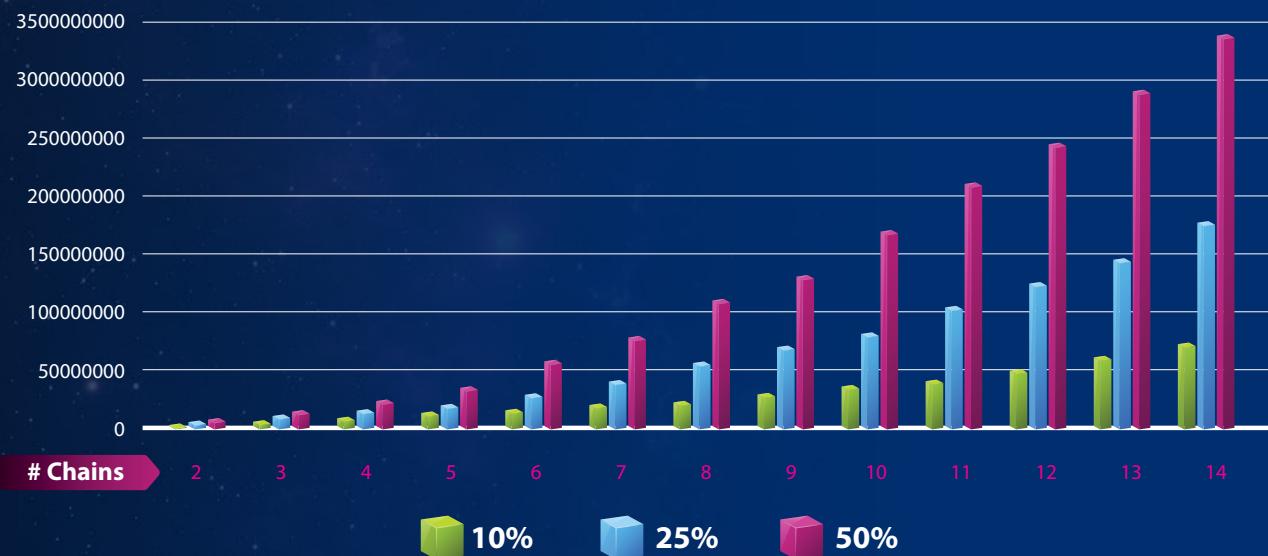
Of the total transactions going cross-chain, Relay can capture a percentage of the total market. We assume 10% market capture as a minimum and work towards being the most trusted bridge in crypto responsible for > 50%. As bridging is a new service, and the average Ethereum trade is in excess of \$3000, we estimate a \$10 bridge fee to be reasonable for customers securely moving assets between chains.

Monthly bridge revenue simulation

Based on a \$10 transaction fee, the following table represents the market yield as more blockchains are added to the Relay service:

CHAINS	BRIDGES	Market share and revenue (in \$)		
		10%	25%	50%
2	1	750,000	1,875,000	3,750,000
3	3	2,250,000	5,625,000	11,250,000
4	6	4,500,000	11,250,000	22,500,000
5	10	7,500,000	18,750,000	37,500,000
6	15	11,250,000	28,125,000	56,250,000
7	21	15,750,000	39,375,000	78,750,000
8	28	21,000,000	52,500,000	105,000,000
9	36	27,000,000	67,500,000	135,000,000
10	45	33,750,000	84,375,000	168,750,000
11	55	41,250,000	103,125,000	206,250,000
12	66	49,500,000	123,750,000	247,500,000
13	78	58,500,000	146,250,000	292,500,000
14	91	68,250,000	170,625,000	341,250,000

Market share and revenue (in \$)



Relay liquidity pools revenue estimates

Based on:

- 50% of bridge revenue
- Distributed over 21 pools

# OF CHAINS	# OF BRIDGES	% CAPTURE	PER POOL REWARDS (21 POOLS/50% OF A REVENUE)	APR 1M Per Pool	APR 5M Per Pool	APR 10M Per Pool
2	1	10	\$17,857	21.43%	4.29%	2.14%
		25	\$44,642	53.57%	10.71%	5.36%
		50	\$89,285	107.14%	21.43%	10.71%
3	3	10	\$53,571	64.29%	12.86%	6.43%
		25	\$133,929	160.71%	32.14%	16.07%
		50	\$267,857	321.43%	64.29%	32.14%
4	6	10	\$107,142	128.57%	25.71%	12.86%
		25	\$267,857	321.43%	64.29%	32.14%
		50	\$535,714	642.86%	128.57%	64.29%
5	10	10	\$178,571	214.29%	42.86%	21.43%
		25	\$446,428	535.71%	107.14%	53.57%
		50	\$892,857	1071.43%	214.29%	107.14%
6	15	10	\$267,857	321.43%	64.29%	32.14%
		25	\$669,642	803.57%	160.71%	80.36%
		50	\$1,339,285	1607.14%	321.43%	160.71%
7	21	10	\$375,000	450.00%	90.00%	45.00%
		25	\$937,500	1125.00%	225.00%	112.50%
		50	\$1,875,000	2250.00%	450.00%	225.00%
8	28	10	\$500,000	600.00%	120.00%	60.00%
		25	\$1,250,000	1500.00%	300.00%	150.00%
		50	\$2,500,000	3000.00%	600.00%	300.00%

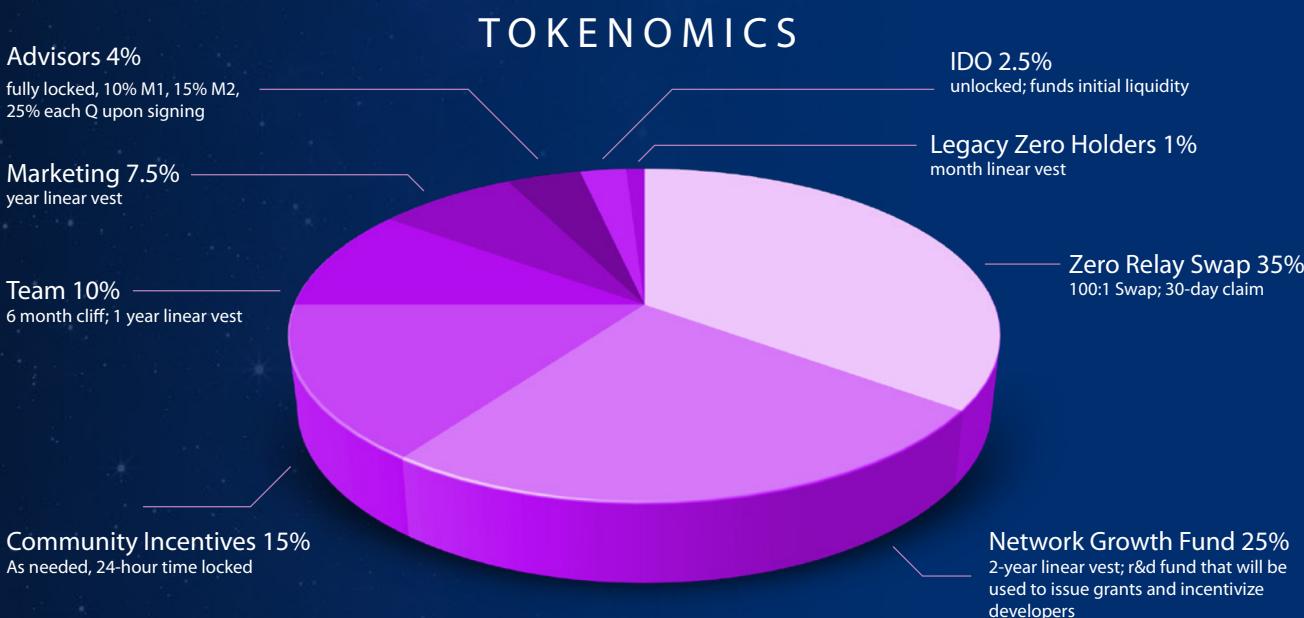
Relay Tokenomics

\$RELAY

Supply: 10 million tokens

Initial price: \$ZERO price multiplied by 100

Initial market cap: Same as \$ZERO (proportional swap)



- ❖ Advisors - tokens are fully locked, if an advisor is signed, they receive 10% of their tokens after 30 days, 15% after 60 days, and the remaining 25% each quarter thereafter.
- ❖ IDO - Initial DEX Offering, helps enable us to bootstrap liquidity on the initial RELAY pools.
- ❖ Legacy Zero Holders - Snapshots already taken in June 2021. Weighted based on current ZERO holdings. Linearly vests each day for 6 months. Fully vested 12/2021.
- ❖ ZERO to RELAY Swap - 100 ZERO can be swapped for 1 RELAY. 30-days to claim. Anything unclaimed is burnt.
- ❖ Network Growth Fund - Linearly vests each day for 2 years. Helps incentivize developers and partners to build on/with RELAY. Fully vested 6/2023.
- ❖ Community Incentives - As needed (for liquidity mining for example) — 24 hour time clock to withdraw any funds from the incentives contract. Community will be notified of the withdrawal and an event will be broadcast on blockchain.

- ❖ Team - 6 month cliff. Linearly vests each day for 1 year after the expiration of the 6 month cliff. Fully vested 12/2022.
- ❖ Marketing - Linearly vests each day for 2 years. Fully vested 6/2023

The swap from \$ZERO

\$ZERO holders will be able to claim \$RELAY tokens in exchange for their \$ZERO tokens at a 100:1 (\$ZERO:\$RELAY) ratio, regardless of the price of \$ZERO or \$RELAY at the time of the claim. The swap is proportional for all holders and does not reduce holders' relative percentages.

The Future:

RELAY is a decentralized project with contributions from a global community working tirelessly to connect every critical blockchain. As RELAY grows, the community does, too.

Roadmap

- ❖ Continuous onboarding of new chains: Cosmos, Fantom, Solana, and Near (Aurora)
- ❖ Marketing Marketing Marketing
- ❖ Implement the Relay Vault
- ❖ Rollout Dynamic Bridge Fees
- ❖ Integrate insurance to protect against contract exploits
- ❖ B2B: Forge partnerships with the largest chains and liquidity providers
- ❖ Q3/Q4 MEV solutions with SOON
- ❖ Continue forming new partnerships to integrate best-in-breed solutions

As more and more blockchains become operational, there is a pressing need to move assets and capital efficiently from chain to chain. Asset interoperability is paramount to solving the issue of fragmented liquidity across chains, and Relay is leading the race to bridge all of DeFi.



RelayChain

Bridging DeFi



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