



RelayChain

Bridging DeFi

White Paper Version 3.1

November 21, 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

The DeFi island problem	4
2020/2021 - Multiple DeFi Chains	4
The Solution: Race to bridge DeFi is over with RelayChain	5
The opportunities for investors	5
Fast, Secure, Low Cost, Insured	6
Cross Chain Transfers and Arbitrage Explained	7
The RELAY Model (Bridging as a Service)	9
Cross-chain transactions mechanism	10
The RelayChain	11
The Relay Ecosystem:	13
A Complete DeFi Bridge	14
Technical partners	15
Insurance	15
Security	15
The Revenue Architecture:	16
A positive feedback loop between price & utility	16
Estimating the Cross-Chain Market	18
Because Math (the network effect of bridging multiple chains)	18
Monthly Bridge revenue simulation	20
Monthly Liquidity Pool revenue estimates	21
The Tokenomics	22
The Future	23

The DeFi island problem

2020 / 2021 - Multiple DeFi Chains,

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 Users began seeking solutions to Ethereum's outdated performance on 3rd generation blockchains, like Avalanche, Moonriver, Polygon, Fantom, IoTeX, Shiden, Solana, Cosmos, Binance Smart Chain, etc.

Unfortunately, each of these new blockchains is 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 need the ability to move capital between chains with ease, security, and speed.

As blockchain technology continues to rapidly evolve, many more networks will undoubtedly be created in the coming years. Not every crypto project can afford to develop bridges themselves to all the networks they want to cross chain. It is important to recognize that bridging services offered by specialized 3rd parties will play a key role in transporting assets between popular blockchains and enabling specialized blockchains to interconnect.



The Solution: Race to bridge DeFi is over with RelayChain

RelayChain was formerly a multi purpose DEX integrating bridges that we all developed ourselves. We decided to pivot to being exclusively a Bridging as a Service provider, enabling other projects like 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 had both the first mover and structural advantages (having already built the technology and tested it on our DEX for almost a year). Further, by incorporating Relay into DeFi applications, adoptance is virtually frictionless.

Our Bridging as a Service model launched on August 2nd, 2021. A small IDO in July 2021 allowed us to secure a treasury for funding a development team during 12 months. This gave the team some cash flow runway until the bridge revenue model became profitable, which it already did less than 3 months after launch.

The opportunities for investors

The fragmented DeFi landscape opens up great opportunities:

-  Price discrepancies between blockchains allowing arbiters to quickly earn on the trades
-  Explosion of Defi projects across the chains and liquidity pools opening up with high initial APRs:
Move quickly funds from chain to chain to enter with optimal short term returns
-  Trading activities on many chains, invest in projects operating on specific chains

Fast, Secure, Low Cost, Insured

Bridges need to be:

- ❖ **Fast:** To allow users to enjoy a stress free bridging experience and execute upon transient investment opportunities
- ❖ **Secure:** Code and smart contracts have been audited 3 times (the ChainSafe foundation of our bridges by Consensys Diligence, our bridges in our former DEX by Zokyo, and a full security audit by Halborn in August 2021)
- ❖ **Low cost:** Bringing service value to the bridge users (fast and secure) and deliver outstanding bridging services to projects integrating our bridges
- ❖ **Reliable:** No loss of funds, automatic processing of stuck transactions

Service oriented

- ❖ Users can't be left stranded for days without any insight into their issue resolution progress. We have a formal ticketing system and help desk process.
- ❖ Propose an insurance option

Cross Chain Transfers 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.

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 Polygon move to Avalanche 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)

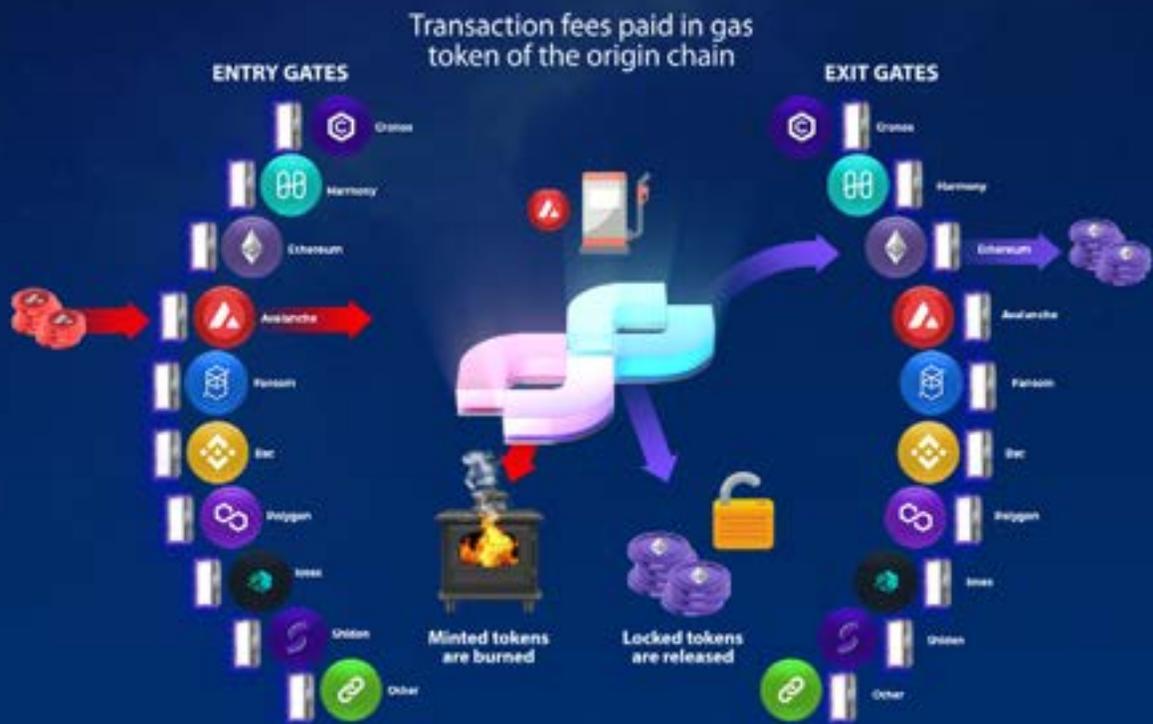
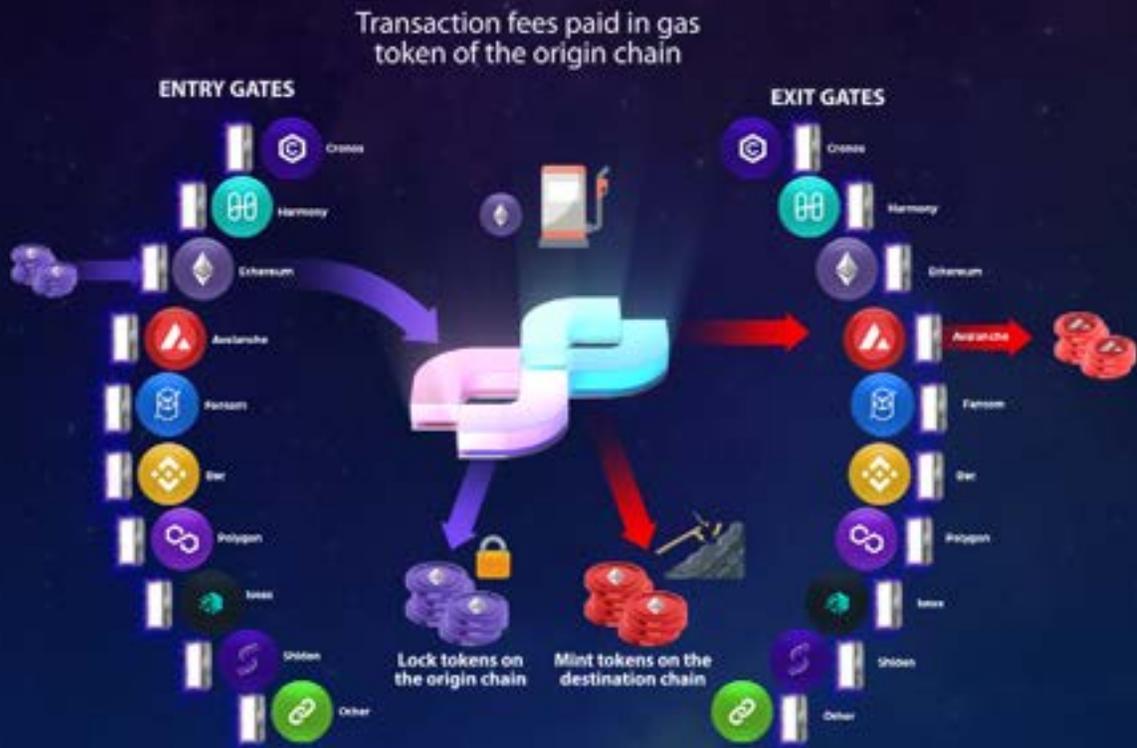


Relay offers a seamless bridge that operates across a growing list of smart chains where it can be integrated directly into native DeFi applications, dApps, and DEXs at the discretion of the projects, this is Bridging as a Service (Baas). Or just use our own bridging user interface.



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 mechanism



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.



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

To learn more how the bridge works, please check this page

<https://about.relaychain.com/the-relay-bridge-how-does-it-work/>

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 blockchain 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
- ❖ Native asset conversion (Gondola Finance)
- ❖ Insurance (Bridge Mutual)
- ❖ Ticketing and Support workflow
- ❖ Participating Community

BaaS and LP Partners

-  Quickswap
-  Solarbeam
-  Moonswap
-  Canary
-  Boltswap
-  FreeRiver
-  Trader Joe
-  Artemis
-  Farmers Only
-  Apeswap
-  1swap
-  Crodex
-  Crystl.Finance

Relay Chains

-  Avalanche
-  Moonriver
-  HECO
-  BSC
-  Ethereum
-  Polygon
-  Cronos
-  Harmony One
-  Fantom
-  Shiden
-  lotex

dApps / others

-  QiDao
-  Ghoul Finance
-  MNC Ventures

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

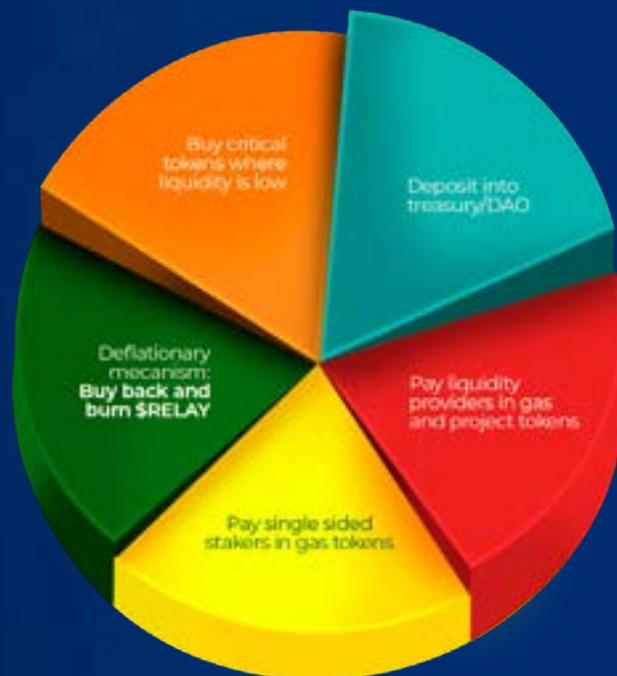
All Relay contracts and code have undergone an extensive audit by the excellent team at Halborn Security, plus a previous audit performed by Zokyo in early 2021. The combined Relay dev team has more than 30 years experience in blockchain.

The Revenue Architecture

A positive feedback loop

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.

Bridge Fee Distribution



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 bridge liquidity with our partners in return for rewards emitted in native fee gas tokens or project tokens, like AVAX, MOVR, QUICK, SOLAR, MOON, SDN, etc. \$RELAY token holders have also the option to enter single sided staking to earn without any risk of impermanent loss rewards in native fee gas tokens (AVAX, MOVR, MATIC, etc). Both strategies are aiming to reward \$RELAY holders with a share of the bridge revenues, without any \$Relay token emissions in the process.

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 = low cost + better + faster swaps = more users = more value, and so on.



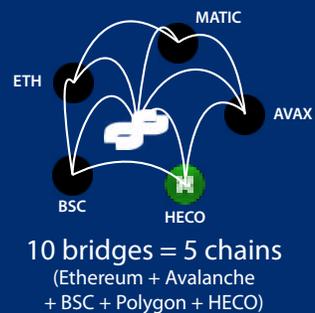
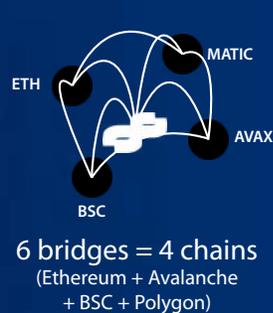
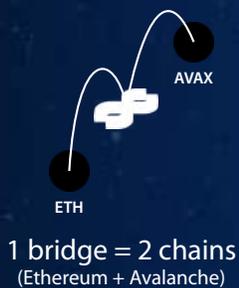
Estimating the Cross-Chain market

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:

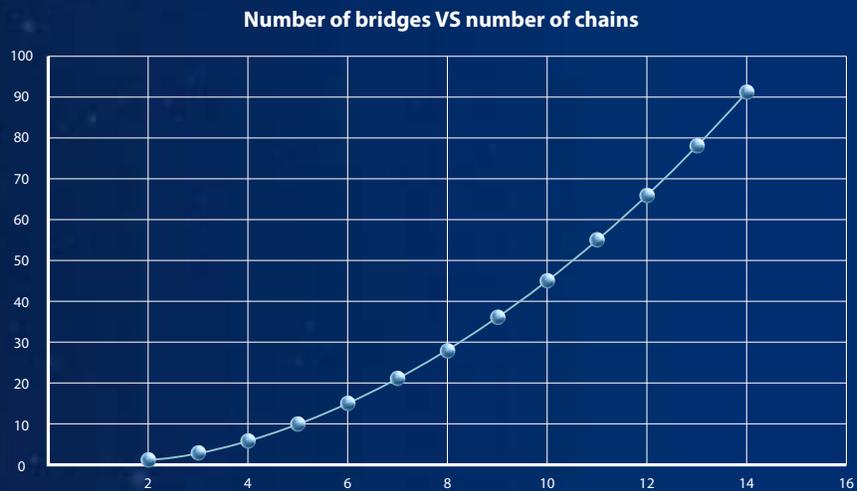


Equation to calculate the number of bridges as a function of the number of chains:

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

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

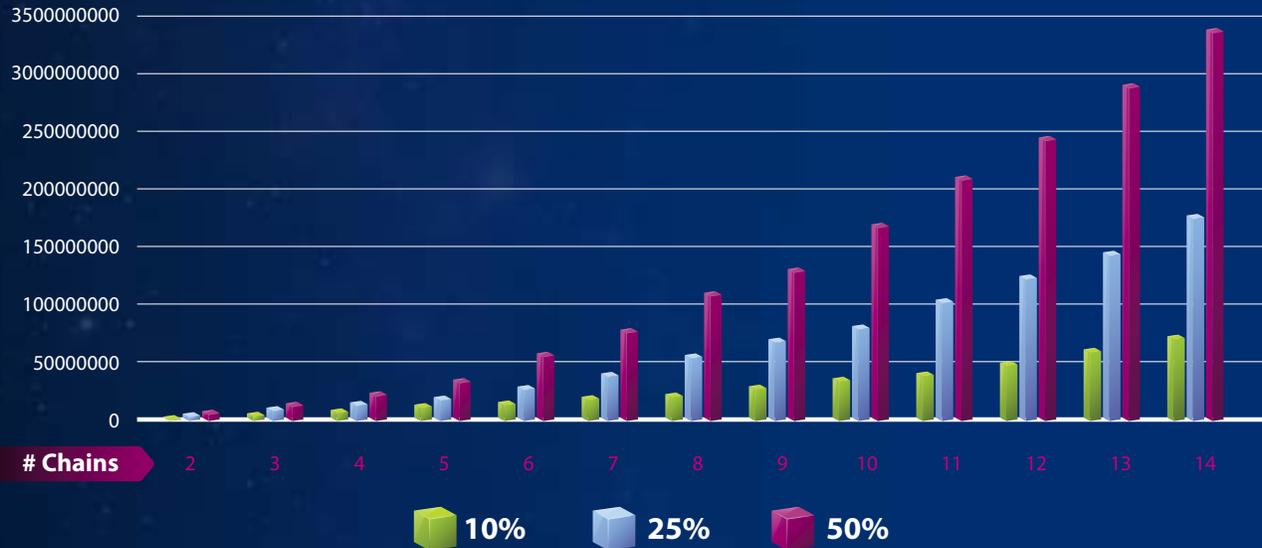
Of the total transactions going cross-chain, Relay can capture a percentage of the total market. We assume 10% market capture as a minimum and work towards being the most trusted bridge in crypto responsible for > 50%. As bridging is a new service, and the average Ethereum trade is in excess of \$3000, 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:

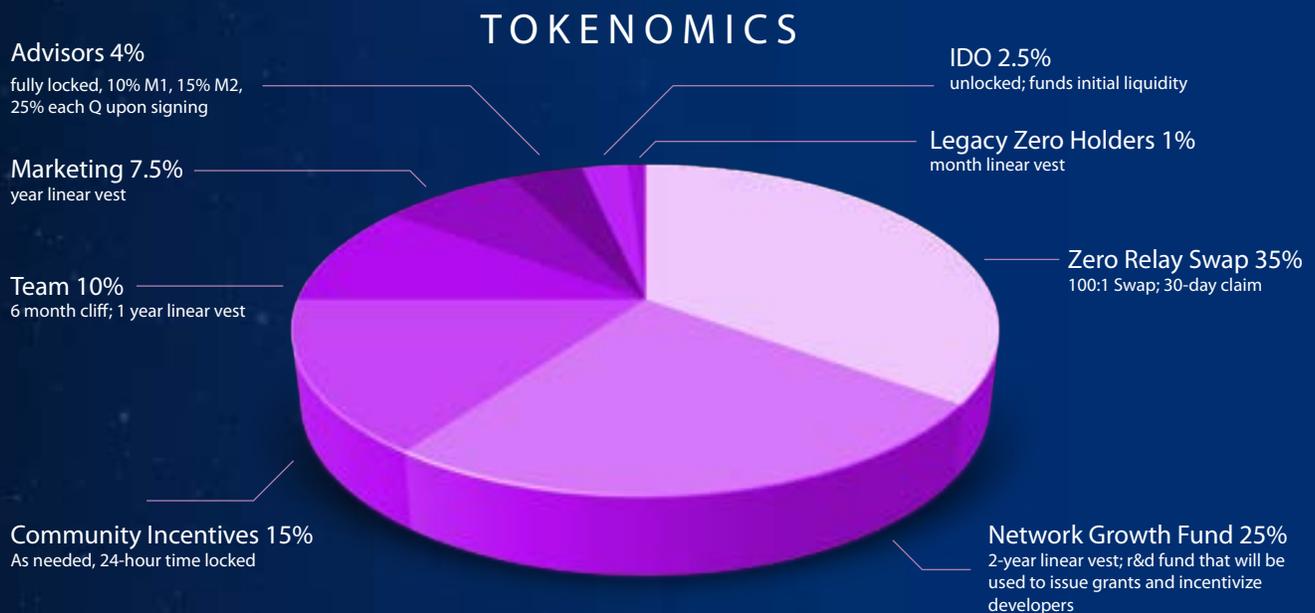
- 50% of bridge revenue
- Distributed over 21 pools

# 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 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

Disclaimer: Objectives, realisation, timing are subjected to changes (opportunities/after community consultation/partnerships/etc)

- ❖ Continuous onboarding of new chains: Cosmos, Solana, Arbitrum, Near (Aurora)
- ❖ Continue forging partnerships with chains, lending platforms, smart contract platforms, liquidity providers, etc
- ❖ Continue forming new partnerships to integrate best-in-breed solutions for features not developed by the Relay team
- ❖ Q4: Start the process to rewards ZERO legacy holders
- ❖ Q4 2021/Q1 2022 MEV solutions with Manifold Finance
- ❖ 2022: The Relay Vault

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



White Paper Version 3.1
November 21, 2021