Bitwise®

The Investment Case for XRP

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About Bitwise

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I Executive Summary

XRP is one of the oldest and largest crypto assets. Launched in 2012, it has sustained strong interest from investors and developers alike across multiple bull and bear markets.

Despite its longevity, however, it remains one of the most divisive assets in the crypto universe, with passionate advocates and equally passionate detractors.

Advocates note XRP's 12-year track record of sustained relevance and the ability of the underlying blockchain (the XRP Ledger) to provide low-cost, scalable transactions. Since inception, the blockchain has accurately processed a remarkable 2.8 billion transactions. The asset's scale and longevity are all the more impressive given the blockchain's unique design, which manages to operate without direct payments to validators, giving it an efficiency edge over competitors. Notably, the XRP Ledger is also built flexibly to accommodate regulatory demands, positioning it well for crypto's 'mainstream era.'

Detractors note that despite a decade of efforts and robust foundation support, broad 'real-world' use has been hard to come by. While there have been multiple proof-of-concept partnerships with large financial institutions, none have yet achieved breakaway scale. Additionally, sceptics raise questions about XRP's tokenomic design, wondering whether robust demand for use of the underlying XRPL Ledger will translate into robust use of XRP itself. They also raise concerns about centralization and legal risk.

This report aims to answer those questions directly. It starts with a brief overview and history of the asset before exploring the underlying technology and blockchain in depth. It then delves into the current and potential futures uses of XRP and the XRP Ledger, examining both the bull and bear cases for XRP. It closes with a valuation framework for XRP.

We would note that the timing of this report's publication is advantageous. For the past four years, XRP and its original developer, Ripple, have faced aggressive persecution from US. regulators, including a high-profile lawsuit from the US Securities and Exchange Commission (SEC). While Ripple has successfully fought back against this assault in court, these legal and regulatory threats stunted the blockchain's bid for mass adoption. Following the November 2024 election, the overall regulatory outlook for crypto is much improved. Many believe XRP will see substantial regulatory relief and will be able to compete in the marketplace on a level playing field. In one early sign of this progress, as this report was going to press, the Trump administration announced plans to hold XRP as part of a strategic crypto reserve.

In other words, we now get to see what XRP can really do. This report aims to handicap its potential for success.

II Introduction: Understanding XRP

The key to understanding XRP starts with understanding three pieces of terminology:

— The **XRP Ledger** (or "XRPL") is a fast, efficient blockchain initially designed to support payments.

— **XRP** is the native crypto asset of the XRP Ledger.

— **Ripple** is a private company that developed XRP and the XRP Ledger, and it controls much the XRP supply.

These terms are often conflated in the media. In particular, people often refer to both the XRP Ledger and XRP as 'Ripple.' This mistake stems from XRP's history—at one point, XRP was called Ripple—and leads to unnecessary confusion. Keeping these terms separate makes it easy to understand how the XRP ecosystem functions and grasp the role XRP (the asset) plays within it.

The XRP Ledger (XRPL)

The XRP Ledger is a public blockchain in the same way the Bitcoin and Ethereum blockchains are public blockchains. It was developed by Ripple in 2012 with the goal of facilitating fast, low-cost payments.

Today, the XRP Ledger supports a wide range of capabilities. For instance, transactions on the XRP Ledger can take place in multiple currencies, and features exist that allow users to send and receive US dollars, stablecoins, and various crypto assets (including XRP itself). Users can also execute cross-currency payments: For example, one party can send dollars and the other can receive euros. The XRP Ledger has a built-in decentralized exchange and an auto-routing mechanism (called 'Pathfinding' or 'Auto-Bridging') that helps efficiently execute these different types of transactions.

The XRP Ledger can settle roughly 1,500 transactions per second, with settlement finality of 3—5 seconds. By comparison, the Bitcoin blockchain can settle roughly 7 transactions per second, with settlement finality of 10—60 minutes.

XRP

XRP is the native asset of the XRP Ledger. It has three roles within the ecosystem:

1. **Transaction Fees:** Users must pay a fee in XRP to execute each transaction on the XRP Ledger.
2. **Spam Prevention:** All accounts utilizing the XRP Ledger must hold a small amount of XRP, called the 'Base Reserve Requirement.' This creates a minimum cost of using the network, which is designed to prevent spam accounts from disrupting or spamming the network. The Base Reserve Requirement is currently 1 XRP, having been lowered from 10 XRP in December 2024. For certain asset-creation activities, there is a separate reserve requirement of 0.2 XRP.
3. **Bridge Currency:** XRP can be used as a bridge currency in the XRP Ledger to lower the cost of transacting between currency pairs.

The last point is important.

As previously mentioned, technically, users of the XRP Ledger can execute transactions without utilizing XRP. But as the native asset of the ecosystem, many of the most liquid currency pairs and payment channels within the XRP Ledger feature XRP: USD—XRP, EUR-XRP, BTC—XRP, etc. This contributes to the use of XRP in transactions on the XRP Ledger, as the asset can be used either as a primary payment currency or as part of cross-currency pairs.

Ripple's initial vision was to create an ultra-efficient global crossing network for transactions in all types of currencies. Within this network, XRP plays a central role.

Historical Background

Understanding XRP's history adds important context for evaluating the asset's future.

RipplePay: 2004—12

XRP traces its roots back to 2004 when a Canadian software developer named Ryan Fugger launched a payment tool called RipplePay. Fugger was frustrated by the costly role banks played in processing financial transactions and wanted to create a lower-cost, peer-to-peer alternative.

RipplePay was developed prior to the 2008 publication of the bitcoin white paper, and therefore, did not use a blockchain-based architecture. Instead, it relied on 'trust channels': One-to-one payment channels between individuals or entities, which facilitated rapid and low-cost settlement under the right circumstances.

RipplePay itself, however, faced significant challenges. Among other limitations, the lack of an underlying blockchain meant the network required a centralized ledger to function. It also meant that both parties in each individual payment channel had to trust one another before a transaction could be completed; parties that did not know one another could not securely transact.

But the core concept—of a flexible technology that facilitates fast peer-to-peer payments across multiple currencies—remains a key feature of the XRP Ledger today.

OpenCoin and the Creation of XRP: 2012—13

In 2012, two fintech entrepreneurs—Jed McCaleb and Chris Larsen—founded OpenCoin Inc. and acquired RipplePay's assets and technology from Fugger. Together with Arthur Britto and others, they began adapting RipplePay's technology to the emerging blockchain ecosystem, a process that included the development of the XRP Ledger. The goal remained the same as the original RipplePay: to create a fast, efficient solution for payments.

The new blockchain had multiple points of differentiation compared to other blockchains at the time. For one, it was designed to allow for certain types of regulatory compliance with unique capabilities to freeze payments in certain situations. It was also uniquely efficient, utilizing a consensus mechanism that did not rely on compensating validators for processing transactions, giving it an efficiency edge.

But perhaps the biggest point of differentiation came in December 2012 when Ripple created the blockchain's native token, XRP. The firm created 100 billion XRP on day one and determined that no additional XRP above this amount would ever exist. This differed from most other crypto assets, including bitcoin (BTC), which feature ongoing issuance over time (albeit, in the case of bitcoin, with an ultimate cap).

Most of the XRP created (roughly 80%) was retained by the company and related foundations, with plans to sell and gift it over time to support the development of XRP and the XRP Ledger ecosystem.

Ripple and Initial Growth: 2013—20

OpenCoin Inc. was rebranded as Ripple in 2013, and developers expanded the core capabilities of the network, introducing concepts like the Interledger Protocol (ILP), which facilitates transactions between both various blockchains and traditional payment rails, and On-Demand Liquidity (ODL), which is designed to support instant cross-border payments.

During this period, Ripple entered into multiple high-profile business relationships with large financial entities, using its large corporate Treasury to support growth. For instance, in 2019, the firm entered into an agreement with the well-known international payment facilitator MoneyGram, wherein Ripple invested $50 million in MoneyGram and MoneyGram began using the XRP Ledger to facilitate certain cross-border payments. These sorts of 'real-world' partnerships formed a key part of the excitement surrounding Ripple and XRP, helping turn XRP into one of the largest crypto zassets in the world.

SEC Lawsuit and Legal Battles: 2020—24

In December 2020, the SEC filed a lawsuit against Ripple arguing that the creation and sale of XRP constituted an illegal securities offering. While Ripple immediately challenged the lawsuit in court, it faced significant fallout. The coin was delisted from many exchanges, and the pace of new business developments slowed significantly.

It is hard to overstate the challenge this presented to Ripple and XRP. A large part of Ripple and XRP's unique selling position was facilitating fast and low-cost payments, primarily for regulated entities. But what regulated entity would invest significantly in a project facing a material legal threat from the primary US financial regulator?

Things improved in July 2023 when Ripple earned a significant victory in court, with a New York City District Court siding with Ripple in the SEC lawsuit and ruling that XRP was not a security when sold on the secondary market. The asset was quickly relisted on many exchanges, and business development opportunities and investor sentiment improved. Still, the SEC appealed the ruling, and the regulatory threat persisted.

New Regulatory Outlook: 2025 and Beyond

As we turn to 2025, it appears to be a new era for Ripple and XRP. The 2024 US election installed a staunchly pro-crypto administration in Washington and created hopes for a new age of regulatory clarity. XRP stands to benefit significantly from this change as the regulatory clouds that have held it back disperse. Already, there are signs that XRP and the broader Ripple ecosystem are entering a new era of growth, including the recent launch of a new Ripple stablecoin, advancing technological capabilities, and the growth of new applications.

III Technical Architecture

How XRP and the XRP Ledger Work

Consensus Mechanism

Public blockchains are decentralized networks that maintain a shared database. The bitcoin blockchain, for instance, is a decentralized database maintained by more than 15,000 independent 'nodes.' (A node is a computer that runs the blockchain's software and independently validates every transaction.)

The biggest challenge in maintaining a decentralized network is ensuring that all these independent nodes agree and have the exact same copy of the database at any given time. You cannot have nodes that cheat or try to update the database with fraudulent transactions, and you cannot have conflicting copies of the database across different nodes.

The process that allows decentralized networks to faithfully process transactions and stay in sync is known as the 'consensus mechanism.' Different blockchains use different types of consensus mechanisms, the most popular of which are 'proof of work' and 'proof of stake.'

Bitcoin, for instance, uses a proof of work consensus mechanism. The 'work' refers to the efforts and activities of bitcoin miners that expend significant computing power to participate in, maintain, and validate the network. Ethereum, on the other hand, uses a proof of stake consensus mechanism. The 'stake' refers to the fact that participants must 'stake' Ethereum's native asset, ETH—effectively putting up valuable ETH as a bond—before they are allowed to process transactions. If they are caught lying or failing to adequately maintain the network, their ETH is 'slashed' (i. e., confiscated by the Ethereum software). In both proof of work and proof of stake consensus mechanisms, validators are compensated for their efforts and risk by receiving a combination of newly issued grants of the native crypto asset and a portion of transaction fees paid by users of the network. Bitcoin validators receive grants of BTC, for instance, and Ethereum validators receive grants of ETH.

The XRP Ledger utilizes a 'proof of authority' consensus mechanism. The remarkable thing about XRP Ledger's consensus mechanism is that it does not compensate validators for their participation and efforts. Instead, validators participate out of general support for XRP and the XRP Ledger. In this context, reputational benefits mean that validators on the XRP Ledger gain credibility, trust, and recognition within the XRP and blockchain community by participating in the consensus process. Since validators are not financially rewarded, their incentive comes from being seen as trustworthy and contributing to the stability and security of the network.

Counterintuitively, this 'volunteer approach' has worked exceptionally well for more than a decade and appears to have staying power. Needless to say, the fact that the blockchain can sustain operations without paying validators to maintain it makes XRP exceptionally efficient (and unique).

How Does Proof of Authority Work?

The XRP Ledger is maintained by a decentralized group of nodes. Anyone can run a node on the XRP Ledger, which involves running the XRP Ledger software, maintaining a copy of the ledger, and validating new transactions submitted to the network. To maintain their ledgers, these nodes look to a special group of 'trusted validators' in order to function.

In the XRP Ledger ecosystem, trusted validators are a type of node that validates transactions and proposes blocks of transactions for settlement. Trusted validators must be pre-approved by recognized authorities within the XRP ecosystem before they can participate in this process. (This is where the word 'authority' comes from.)

Ripple maintains the default list of trusted validators—called the 'Unique Node List'—but other respected and independent entities like the XRP Foundation, Coil, GateHub, and certain universities can also approve trusted validators and maintain Unique Node Lists as well.

Any node maintaining a copy of the XRP Ledger looks to a Unique Node List to understand the state of the network. When 80% of the trusted validators within a Unique Node List accept a proposed block of transactions, those transactions are considered settled, and all parties pointing to that Unique Node List update their copy of the ledger to include the new block of transactions. This process occurs every 3—5 seconds and has operated seamlessly for more than a decade.

Proof of authority has many advantages. It is energy efficient and cost effective, offering sub-penny transaction costs. It also avoids reorganization risks, such as changes to a block after validation, which sometimes occurs in proof of work systems. This allows for faster finality of settlement.

Critics of the proof of authority consensus mechanism note that it is more centralized than other consensus mechanisms due to the reliance on centrally maintained Unique Node Lists. Additionally, the lack of financial penalties or incentives introduces potential risks into the system: Without incentives, why would nodes continue to validate the network? Without penalties, what disincentive exists to deter malicious nodes from submitting inaccurate or fraudulent transactions?

Other Key Technical Features of the XRP Ledger

Native Functionalities: XRP Ledger supports the transfer of multiple types of assets, including XRP, nonfungible tokens (NFTs), and issued currencies (IOUs). IOUs are on-chain representations of fiat currencies, commodities, or other assets issued by trusted third parties, similar to USDC and other stablecoins.

Decentralized Exchange with Central Limit Order Book: XRP Ledger has a built-in decentralized exchange (DEX), enabling low-cost token trading with a central limit order book (CLOB). The CLOB consolidates liquidity and immediately executes trades which, according to Ripple, reduces trust assumptions compared to smart contract-based DEXs that introduce additional programming layers into the transaction process. The DEX also offers features like the aforementioned auto-bridging (or pathfinding) for liquidity optimization.

Built-In Compliance: The XRP Ledger has multiple built-in compliance features that orient it towards regulated activities. This includes ways for institutions and other parties to issue 'trust lines' that ensure that only select, approved parties can interact with specific assets. Institutions then have the ability within these trust lines to enforce AML/KYC requirements, freeze funds, or take other measures.

On-Demand Liquidity: Over the years, Ripple and other developers have built programs that integrate with the core XRP Ledger to make it more useful. For instance, On-Demand Liquidity (ODL) is a service that uses XRP as a bridge currency to make cross-currency transactions faster and cheaper. A financial institution using ODL can initiate a transfer in one fiat currency, which will be converted to XRP, sent across the XRP Ledger, and then converted to another currency for the receiver.

Automated Market Makers: Automated Market Makers integrate with XRPL's DEX and can provide liquidity through asset pools governed by liquidity provider (LP) token holders. Features like auction slots help mitigate arbitrage impacts and align prices with external markets.

Key Metrics and Recent Growth

Key metrics for measuring the success of the XRP Ledger include market capitalization, average daily active addresses (a metric akin to average daily active users), transactions, and revenue, among others. These metrics spiked in Q4 2024 following the results of the US election amid renewed interest in the XRP ecosystem from retail investors. For instance, as shown in the table below, average daily active addresses doubled and revenue jumped by more than 250% in Q4 2024.

Metric	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Circulating Market Capitalization	$33.3 bn	$34.6 bn 3.9%	$26.5 bn (23.4%)	$34.6 bn 30.6%	$119.5 bn 245.4%
Price	$0.62	$0.63 1.6%	$0.48 (23.8%)	$0.61 27.1%	$2.08 241.0%
Revenue	$190.6k	$204.5k 7.3%	$136.8k (33.1%)	$178.9k 30.8%	$630.3k 252.3%
Average Daily Active Addresses	30.2k	41.4k 37.1%	28.9k (30.2%)	27.9k (3.5%)	55.6k 99.3%
Average Daily Transactions	1.3 mn	2.8 mn 115.4%	0.9 mn (67.9%)	1.7 mn 88.9%	1.9 mn 12.4%
Unique Addresses	209.1k	183.2k (12.4%)	95.6k (47.8%)	105.2k 10.0%	506.9k 381.8%
Issued Currencies Market Capitalization	$166.1 mn	$163.6 mn (1.5%)	$121.8 mn (25.6%)	$95.8 mn (21.3%)	$264.2 mn 175.8%
Average Daily CLOB Volume	$0.6 mn	$0.8 mn 33.3%	$0.5 mn (37.5%)	$0.6 mn 20.0%	$7.9 mn 1216.7%
Average Daily AMM Volume	—	$7.0k	$143.0k 1,942.9%	$161.0k 12.6%	$5.2k (96.8%)
Average Daily Total NFT Transactions	48.4k	20.1k (58.5%)	6.6k (67.2%)	7.5k 13.6%	41.7k 456.0%

Source: Bitwise Asset Management with data from Messari and DeFi Llama. Data as of December 31, 2024.

IV Applications and Use Cases

Current and Future

Public discussions of the 'real-world use' of XRP are frustrating. Supporters claim that the network's payment solutions are widely used, highlighting multiple one-off examples as proof. Sceptics respond with claims that the vast majority of XRP-related activity is speculative.

The reality is that both sides are correct. As with all crypto assets, there is a significant amount of speculative activity in XRP. At the same time, the tool and its underlying blockchain serve many real-world use cases.

This section of the paper aims to disentangle these arguments and highlight both current and potential future real-world applications of XRP and the XRP Ledger.

Current Use Cases: A Data-Driven Approach

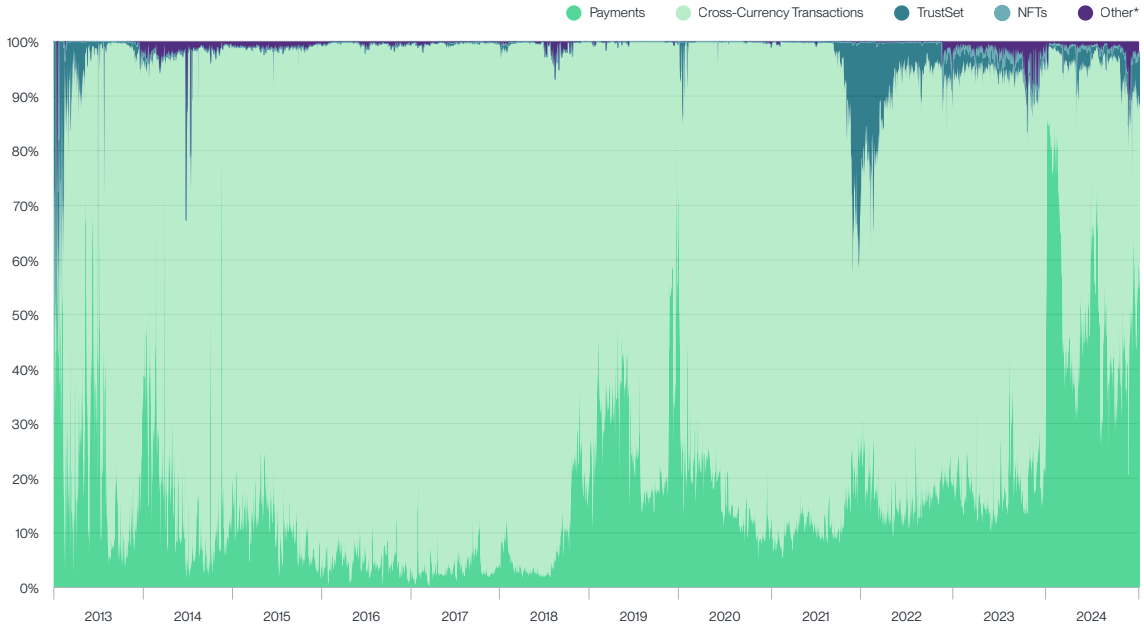
The best place to start when evaluating how crypto assets and public blockchains are being used is to look at the underlying data.

The chart below breaks down the share of transactions on the XRP Ledger by order type, divided between six major categories:

- **Payments:** Direct transfers of XRP from one user to another.
- **Cross-Currency Transactions:** Orders submitted to the XRP Ledger's internal decentralized exchange, allowing for the exchange of one asset for another. XRP could (but does not have to be) one part of this transaction.
- **TrustSet:** Transactions that set up a direct 'trust channel' between two parties, allowing for the rapid transfer of a certain kind of asset in the future. Readers familiar with the Lightning Network can compare trust channels with 'payment channels.'
- **NFTs:** An order to create an NFT directly within the XRP Ledger.
- **Other:** A catch-all category for a variety of other transaction types that take place on the XRP Ledger, such as TicketCreate transactions (an administrative tool that offers users the ability to pre-order or pre-ready future transactions for faster execution).

The data shows that the vast majority of activity on the XRP Ledger consists of direct transactions in XRP (payments) and cross-currency transactions (via OfferCreate and OfferCancel). Market share has varied over time, with payments dominating more recently. Other transaction types typically make up a small fraction of activity on the network, although certain segments like TrustSet transactions can spike over time.

XRPL Transaction Composition



Source: Bitwise Asset Management with data from XRPscan. Data as of January 23, 2025.

Are ‘Payments’ Really Payments?

A natural question that arises when analysing this data is whether terms like ‘payments’ accurately reflect the nature of transactions on the XRP Ledger or if much of this activity is driven by speculation.

The reality is that the data alone cannot distinguish between the two. A speculative transaction involving the transfer of XRP between users is functionally identical to a payment transaction where one user compensates another for goods or services. The same challenge applies to cross-currency transactions—it is nearly impossible to determine how much of this activity stems from international B2B payments versus crypto asset trading.

Ultimately, the data does not reveal intent.

What we can conclude from a data-driven standpoint is that XRP efficiently facilitates high-volume payments and cross-currency transactions. Moreover, the blockchain’s flexibility allows it to support various types of transactions, with their relative significance shifting over time.

For long-term investors, these insights are more meaningful than sceptics acknowledge. Most XRP investors are not betting that today’s transaction volumes alone justify the asset’s value. Rather, they are betting that the blockchain will experience substantial growth in usage. The ability of the network to handle high transaction volumes across multiple use cases is crucial—and the data confirms that it can.

Real-World Use Cases

Because we cannot extract intent from the data, it is useful to review specific examples of how XRP and the XRP Ledger are being used in the ‘real world.’ While these are by definition anecdotal, they nonetheless offer a view into the potential future applications of XRP.

Ripple claims to have over 100 financial institutions that use its RipplePay solutions for invoicing, supply-chain management, real-time remittances, and other solutions. In the course of writing this paper, we examined more than a dozen examples. Our survey suggests that, currently, the typical XRP Ledger user appears to be a small- to mid-sized financial institution, often in a foreign country, which utilizes Ripple-based solutions for remittances, cross-border payments, or other international monetary transfers. For example:

- **SBI Remit** uses Ripple to power instant remittances between customers in Asia.
- **MoneyMatch** uses Ripple to make it cheaper and faster for Malaysian companies to pay global suppliers.
- **Travelex** uses Ripple to enable customer payments in multiple countries and to enter into foreign markets.

This makes sense: Small- and medium-sized businesses do not have access to the same financial tools as large financial giants, which may be able to process transactions on internal networks. Additionally, because international payments are one of the most expensive and inefficient areas of the legacy payments architecture, it is a natural place for an upstart disruptor to find traction.

We would note: Most of the examples we looked at did not clearly disambiguate the use of XRP from the use of XRP Ledger or other Ripple-based solutions (such as RippleNet, a network connecting banks and financial institutions that can operate independently of XRP).

Future Growth of Payments and Cross-Border Transactions

Most optimistic forecasts for growth in the use of XRP and the XRP Ledger involve significant penetration into the payments and cross-border payments space.

The Total Addressable Market (TAM) of global cross-border payments is substantial. Cross-border payment flows already reached approximately $150 trillion in 2022, according to a study by McKinsey, and are expected to reach $250 trillion by 2027.

Capturing a small percentage of the global cross-border payments market could have a very significant impact on overall network activity and the economics for XRP.

Future Use Case: Asset Tokenization and Institutional Decentralized Finance (DeFi)

While payments and cross-currency transactions remain the dominant use of XRP and the XRP Ledger today—and have the potential to grow significantly over time—XRP Ledger's biggest opportunity may lie asset tokenization, or representing real-world assets like securities, real estate, art, and commodities as tradable blockchain tokens.

Nearly every programmable blockchain is positioning itself to take advantage of rising interest in tokenization, but the XRP Ledger has unique advantages. For one, this capability has been native to the XRP Ledger for nearly a decade, with systems in place to allow treasuries, corporate bonds, equities, and other assets to be traded with the speed and efficiency of the XRP Ledger.

Moreover, the XRP Ledger is designed to facilitate compliance and meet regulatory requirements more easily than many of its peers. Some criticize the network for being more centralized than other competitors by virtue of its reliance on pre-approved nodes for processing transactions. However, this feature and others related to it give the XRP Ledger a regulatory edge.

Ripple's focus on regulated players and real-world assets may lead to safer, more curated offerings—think corporate bonds and real estate over meme coins. This balance of blockchain efficiency and traditional safeguards positions the XRPL to bridge institutional finance and tokenization effectively.

Recent Upgrades and Future Product Expansion Suggest Markets Targeted by Ripple/XRP

The importance of asset tokenization to the XRP ecosystem's growth is made clear by looking at recent and proposed upgrades to the blockchain. In our view, understanding this list is the key to unlocking XRP and the XRP Ledger's direction of travel.

Recently introduced and planned key primitives that expand its capabilities for issuers, investors, and developers include:

Automated Market Maker (live as of April 2024): Automated market makers offer on-chain liquidity pools and auction mechanisms for efficient market making, complementing the XRPL's decentralized exchange functionality for seamless multi-asset swaps.

Decentralized Identity (live as of October 2024): Decentralized identity enables KYC/AML compliance via identity providers, streamlining onboarding for regulated products and laying the groundwork for compliance with security tokens.

Multipurpose Tokens (live as of December 2024): Multipurpose tokens are native assets designed for equity, debt, and hybrid securities with configurable features like dividends and governance rights.

Native Lending Protocol (not yet live): The native lending protocol aims to enable real-world credit products like mortgages and receivables financing, allowing users to lend and borrow assets like XRP (and other crypto assets). Unlike overcollateralized DeFi lending—the most popular approach to onchain lending—the native-lending protocol offers onchain fixed-term and rate loans via off chain underwriting, risk management, and insurance. Recent updates to the proposal improved the efficiency of these transactions and implemented support for clawback and asset freezing to cater to compliance and regulatory requirements.

Federated Sidechains (not yet live): Federated sidechains would allow the XRP Ledger to support parallel blockchains for specialized use cases such as central bank digital currency (CBDC) support, and they would also extend compatibility with other blockchains. These blockchains would interoperate seamlessly with the XRP Ledger while allowing experimentation with novel capabilities and permissioning. Federated sidechains would allow Ripple to focus on targeting institutions while allowing the long-tail demand to be met by other developers.

Each upgrade is impactful on its own, but their combined use unlocks transformative financial possibilities. For instance, real estate deals could leverage the lending protocol for funding, tokenize the mortgage note with compliance via the identity layer, and leverage AMMs for trading and liquidity. Security tokens could live on a sidechain verified through identity layers and traded across the XRP ecosystem.

This interconnected framework allows assets to serve as collateral on one chain, earn yield on another, and transact seamlessly, creating unparalleled financial fluidity and unlocking trillions of dollars in value.

It is a big vision. Ripple's focus on integrating compliance and risk controls into the XRP Ledger builds trust with institutions and regulators, marrying blockchain efficiency with legal enforceability. The goal is a global financial operating system—open, instant, and compliant—that redefines how value is created and exchanged.

SIDEBAR: The Regulatory Overhang

One of the biggest challenges to XRP's growth in recent years has been regulatory pressure.

In Q4 2020, the SEC filed suit against Ripple, alleging that its sales of XRP tokens represented illegal securities offerings. In response to the lawsuit, many exchanges proactively discontinued support for the token, including Coinbase, the largest U. S.-based crypto exchange.

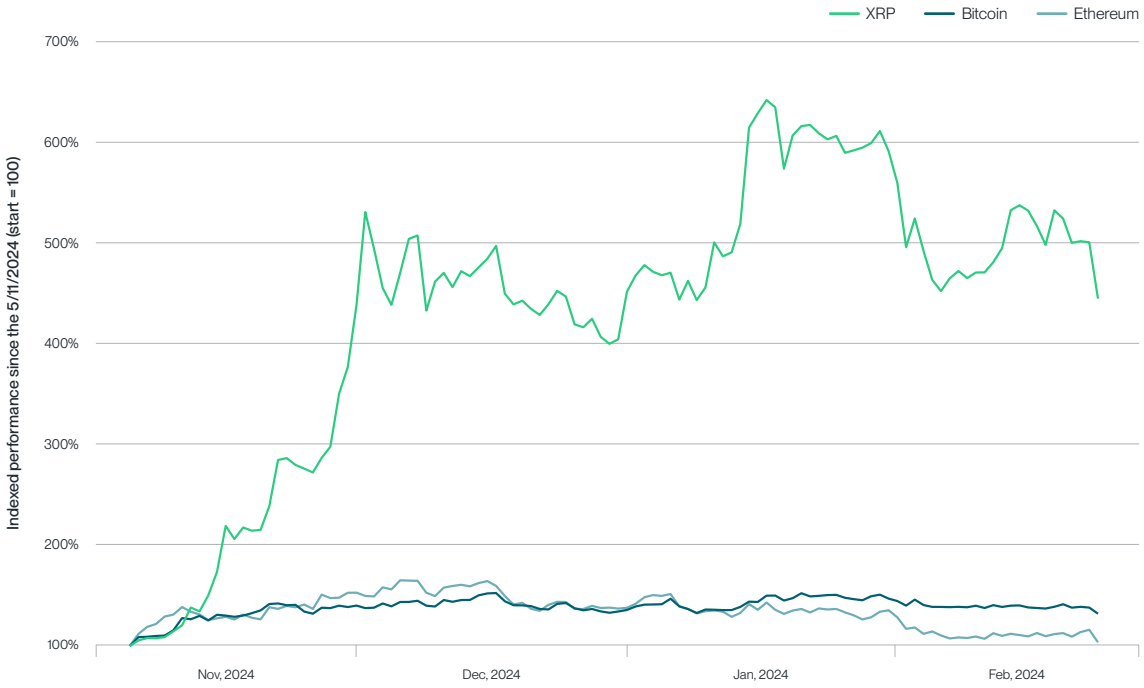
Ripple fought back against the SEC in court, and ultimately prevailed: In Q3 2023, Judge Analisa Torres of the Southern District of New York ruled (mostly) in favour of Ripple, finding that secondary sales of XRP did not constitute an illegal securities offering. The crypto industry breathed a sigh of relief, and XRP was relisted on many exchanges. But the SEC announced its intention to appeal, and the court case remains active today. The appeal and cross-appeal process is expected to continue into the first half of 2025, with oral arguments likely in fall 2025, followed by a final ruling from the appellate court.

We believe that the uncertainty created by this regulatory assault severely slowed the real-world adoption of XRP. As a reminder, a key element of the XRP story is the belief that the blockchain can serve institutional use cases. But with a dire regulatory threat hanging over the asset, what institution would invest significantly to build in the space?

Since President Trump took office, however, his administration has taken a number of crypto-friendly steps, including appointing the crypto-supportive Mark Uyeda as acting SEC chair. Moreover, the SEC recently unveiled a crypto task force led by long-term crypto advocate Hester Pearce, and the agency has subsequently begun winding lawsuits against and investigations into crypto companies, such as Coinbase and Robinhood. Given the regulatory pressure XRP has endured over the past four years is (potentially) nearing an end, it is no surprise that XRP rallied more than 400% following the November 2024 US election; investors are betting that the new crypto-friendly administration in Washington will relent, allowing XRP to compete on a level playing field.

Indexed Performance since US election

XRP has been one the biggest beneficiaries from the anticipated decline in US regulatory uncertainty

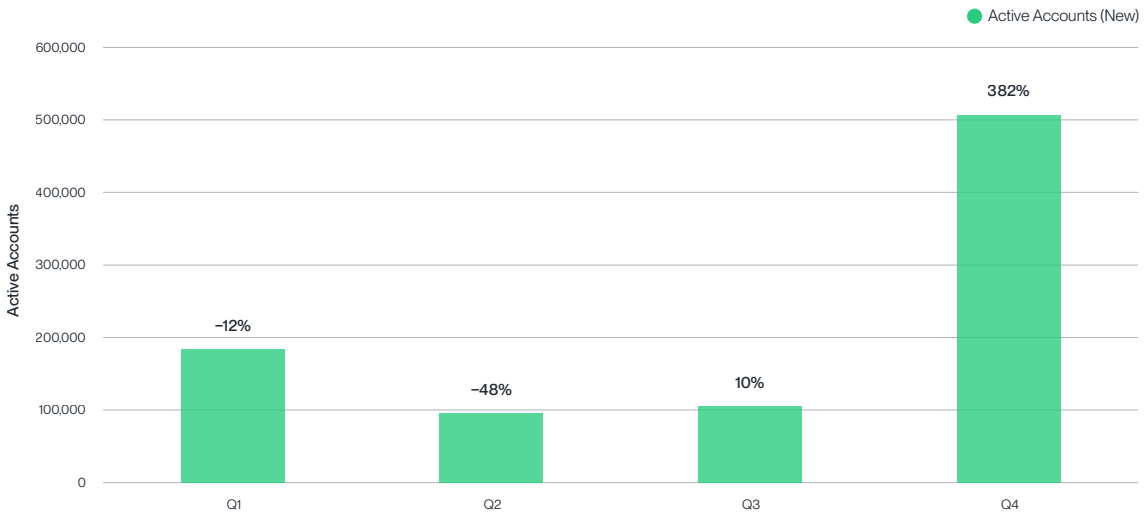


Source: Bitwise Asset Management with data from Coin Metrics. Data as of 25/02/2025

Interestingly, XRP's recent outperformance has generally been supported by improving onchain fundamentals as well. For instance, the number of active XRP addresses has significantly increased by almost 400% in Q4 2024. This leads us to believe that regulatory threats were suppressing real-world use of the XRP Ledger.

XRP New Active Accounts — 2024

Tracking QoQ Growth: A 382% Surge in New Active Accounts in Q4



Source: Bitwise Europe, Coinmetrics. Percentages represent the change in new active accounts from the previous quarter.

V Valuing XRP

Tokenomics, Potential Growth, and Price Targets

There are three major axes to examine when valuing any crypto asset:

Token Supply and Issuance: How much of a token exists

Tokenomics: What drives value for a token

Growth: How large the ecosystem and token demand could become

By combining a clear understanding of each, one can arrive at a reasonable understanding of the investment opportunity XRP offers.

Token Supply and Issuance

As mentioned, XRP was launched with a fixed total supply of 100 billion tokens. No additional tokens can be produced.

Initially, 80% of these tokens were granted to Ripple to support the ecosystem, while the remaining 20% were distributed to founders and early ecosystem contributors. Ripple slowly releases its tokens into circulation, according to a (largely) preset escrow plan.

Currently, about 57 billion XRP are in circulation, with the remaining supply held either in escrow or by Ripple. Each month, 1 billion XRP is released from escrow, which can be sold into the market or granted to companies or individuals to support the growth of the ecosystem.

Ripple currently has approximately 37.7 billion XRP. Simple math would suggest that all XRP supply would enter circulation within the next three years (March 2028). However, Ripple typically returns a significant portion—roughly 70% to 80%—of released XRP back into escrow, where it is locked for an additional one to 60 months. If this pace persists, the full remainder of Ripple's supply would enter circulation in approximately 12 years (~2037).

For modelling purposes, we think it best to split the difference and assume 100% of XRP enters circulation over the next eight years (~2033).

Tokenomics: What drives value for XRP?

XRP plays three roles in the XRP Ledger and Ripple ecosystem:

Transaction Fees and Burning: On the XRP Ledger, each transaction incurs a small fee, typically around 0.00001 XRP. These transaction fees are permanently burned (i.e., removed from circulation). As of January 2025, approximately 13.46 million XRP have been burned, reducing the total supply to 99.99 billion XRP. At current transaction volumes, the annual burn rate is estimated to be around 0.0075% of XRP's total supply.

Investors modelling XRP often ignore this feature given its small scale to date. We think this is a mistake. Any bullish view of XRP's growth presumes a massive increase in the scale of transactions on the network, and at scale, this burn mechanism becomes significant. A 100x increase in transaction volume, for instance, would mean 0.75% of XRP is removed from circulation each year, which would have a significant impact on the asset's valuation over time.

Spam Prevention: As mentioned, all accounts utilizing the XRP Ledger must hold a small amount of XRP, known as the 'base reserve requirement,' to prevent spam accounts from disrupting the network. The base reserve requirement is currently 1 XRP. Additional types of token transactions have a separate 0.2 XRP holding requirement.

In contrast to the burn mechanism, we do not believe the base reserve requirement is a major driver of ownership in the XRP ecosystem. For instance, there are currently 6.1 million active accounts, meaning the portion of XRP required for account maintenance is exceptionally low. Even if the number of accounts were multiplied by 100, those accounts would be required to hold just 610 million XRP, or less than 1% of total supply.

Bridge Currency and Liquidity Reserve for a Large Ecosystem: Ultimately, the primary driver of XRP's value will be its use within the XRP ecosystem, multiplied by the size and scale of that ecosystem.

As described previously, XRP can be used as a bridge currency for facilitating cross-asset transactions (both currency-to-currency or currency-to-asset transactions). Having studied the network, we believe that currency bridging use is more significant than many sceptics believe, but we acknowledge that the long-term value of bridging is hard to estimate.

If XRP is widely adopted in the XRP ecosystem for bridging purposes, it is easy to imagine investors maintaining resting balances of XRP to facilitate this liquidity. This use would provide XRP with a significant in-ecosystem monetary premium.

The Big Question: Can the XRP Network Significantly Scale?

Ultimately, an investment in XRP is predicated on a belief that usage of XRP and the XRP Ledger will grow significantly. Regardless of the specifics of XRP's tokenomics, the most important question is: Can use of the network scale?

The bull case is easy to see. Among other features, the XRP Ledger offers:

- **Track Record:** The XRP Ledger has functioned for more than 12 years—one of the longest track records in crypto.
- **Strong Community:** XRP has a loyal army of supporters who have stood by the blockchain through thick and thin.
- **Fast, Scalable Transactions:** The XRP Ledger has demonstrated the ability to process 1,500 transactions per second, with sub-minute finality and very low fees.
- **Regulation Ready:** The XRP Ledger has unique compliance features, including built-in decentralized identity support for AML/KYC, which may be attractive to institutional users.
- **Tokenization Capabilities:** The XRP Ledger has executed multiple upgrades, with more planned, aimed at positioning it to compete in the tokenization space.
- **Strong Ecosystem Support:** Perhaps most uniquely, XRP is supported by the largest endowed entity in crypto, Ripple, which holds a war chest of XRP worth roughly $80 billion at the time of writing.

Added together, it is an attractive package. If you assume that the number of users moving onchain will continue to grow, and if you are optimistic about trends like tokenization, which Statista estimates could be a $10.9 trillion market by 2030, then XRP can be considered a viable competitor, on paper, with multiple unique advantages.

Of course, there are many risks. The space could grow slower than investor expectations; other blockchains could outcompete XRP; the XRP Ledger could gain traction while actual use of XRP lags; and so on.

A bet on XRP is a bet that it can compete successfully to be a major piece of a new, tokenized payment and broader financial ecosystem. We will see in the coming years if that is true.

Establishing a Valuation Target

To project XRP's price, we use a formula based on the capital asset pricing model (CAPM) adjusted for regulatory, macroeconomic, and competitive risks via a discount factor.

Formally, the annualized adjusted forecast return for XRP (R_{XRP}) is:

$$R_{XRP} = DF \cdot (\alpha + \beta \cdot R_m) = e^{-\kappa \cdot \sigma} (\alpha + \beta \cdot R_m)$$

Variables	Explanation
α Alpha	Reflects XRP-specific drivers—e. g., legal clarity, major bank integrations, new stablecoin corridors. A positive α implies XRP can structurally outperform the broader crypto market on its own merits; a negative α indicates underperformance.
β Beta	Measures XRP's sensitivity to broader crypto cycles, often proxied by Bitcoin. Based on historical analysis, we estimate β to be approximately 1.92.
R_m Market Return	Our model assumes that XRP's valuation is linked to the overall growth of the crypto market. At Bitwise, our base case is that Bitcoin reaches $1m by 2029, roughly representing a CAGR of 62%. We set ≈60%.
DF Discount Factor	A fractional haircut to the raw return ($\alpha + \beta \cdot R_m$). Here we use a volatility-based discount factor where: $DF = e^{-\kappa \cdot \sigma}$ Where k is a sensitivity parameter set to 1 and σ is the annualized volatility under different scenarios subject to different levels of uncertainty for XRP. We link each scenario's "uncertainty level" to a different historical volatility regime for XRP: — Bear case (~147% volatility) reflects the worst period in 2021 when SEC-driven regulatory scrutiny peaked. — Bull case (~89%) is derived from XRP's year-to-date fluctuations. — Max case (~75%) approximates XRP's volatility will start to approach Bitcoin's lower volatility profile.

XRP Valuation Projections: Bear, Bull, and Max Scenarios

A CAPM-Inspired Model Incorporating Regulatory, Market, and Volatility Factors

Year	Current	2025	2026	2027	2028	2029	2030
Bear Case	$ 3.08	$ 1.82	$ 1.07	$ 0.63	$ 0.37	$ 0.22	$ 0.13
Bull Case	$ 3.08	$ 3.90	$ 4.94	$ 6.25	$ 7.91	$ 10.02	$ 12.68
Max Case	$ 3.08	$ 4.48	$ 6.53	$ 9.50	$ 13.84	$ 20.14	$ 29.32

Source: Bitwise Europe, Coinmetrics

Bear Scenario $\alpha = -50\%,\ DF = 0.23$

Our bear case centres on XRP's critical dependence on institutional adoption within the context of banking sector dynamics. We assign $\alpha = -50\%$ to represent a scenario where XRP fails to capture meaningful share in its key target markets of payments and tokenization. Here, institutional adoption lags, tokenization prospects on XRPL remain minimal, and stablecoin or other activities are overshadowed by rivals.

This would give us the following annual return formula:

$$R_{XRP} = 0.23 \cdot (-50\% + 1.92 \cdot 60\%)$$

Combining $\alpha = -50\%$ with the worst-case historical volatility (~147%) yields a discount factor of 0.23, giving us $R_{XRP} = -59\%$ p.a. This translates into XRP's price collapsing to $0.13 by 2030.

Bull Scenario $\alpha = 0\%,\ DF = 0.41$

Our bull case represents a balanced scenario where XRP maintains its current trajectory with steady network growth. Here, XRP remains legal in major jurisdictions with minimal new headwinds thanks to partial resolution of the SEC lawsuit. Partnerships and onboarding of institutional players increase but do not increase exponentially; cross-border flows and stablecoin usage on XRPL rise in line with global digital asset trends. It remains a small player in payments and tokenization. We assign it an alpha of 0%.

This would give us the following annual return formula:

$$R_{XRP} = 0.41 \cdot (0\% + 1.92 \cdot 60\%)$$

A year-to-date volatility of ~89% leads to a discount factor of $DF = 0.41\%$, which gives us $R_{XRP} = +27\%$ p.a., placing XRP at roughly $12.70 by 2030.

Max Scenario $\alpha = 1\%,\ DF = 0.47$

The max scenario posits that XRP secures a modest but meaningful slice of the multitrillion payments and tokenization use cases, creating significant fee and usage upside.

Statista estimates that real-world asset tokenization could exceed $10.9 trillion by 2030, so even a small share of this tokenization shift (e.g., 1–2%) can have an outsized effect on XRP's market cap. As XRP is geared toward transaction fees for issuing, trading, or redeeming these tokenized assets, the network would see greater on-ledger flows under this scenario. Issuers and participants using XRPL for token creation, custody, or settlement pay nominal fees in XRP. Each transaction burns a fraction of XRP—reducing supply over time—which could support higher valuations for the token.

This would give us the following annual return formula:

$$R_{XRP} = 0.47 \cdot (1\% + 1.92 \cdot 60\%)$$

Thus, we assign $\alpha = 1\%$. A year-to-date volatility of ~75% leads to $DF = 0.47\%$, giving us $R_{XRP} = +46\%$ p.a., and placing XRP at roughly $29.30 by 2030.

XRP's market capitalization ratio relative to bitcoin currently stands at approximately 11%. In our max case scenario, assuming Bitcoin reaches $1 million per BTC (≈ $21 trillion market cap), XRP's projected $2.9 trillion market cap would correspond to a ratio of 13.81%, representing a moderate expansion in XRP's relative market share.

It is important to note that this model does not hinge on XRP dominating the payment or tokenization markets, but rather, capturing a meaningful nonzero share of those areas. It is also worth noting that these scenarios assume that bitcoin continues on a bullish overall trajectory, and that XRP maintains a tight relationship with the general growth of the bitcoin market. Historically, XRP's beta to bitcoin has varied significantly over time

VI Conclusion

XRP stands out as a versatile crypto asset with a decade-long track record of innovation and resilience. Leveraging the XRP Ledger's advanced features—such as low-cost, high-speed transactions, tokenization, and decentralized finance tools—XRP has carved a niche in global payments and emerging financial technologies. As institutional adoption accelerates, supported by regulatory clarity and strategic partnerships, XRP is well positioned to capture significant opportunities in payments and tokenization in the near term, and in additional markets like stablecoins and custody over the long term.

With growing use cases and fundamentals, XRP remains a compelling asset for those seeking exposure to the evolving digital-asset economy. We believe there is significant upside in XRP if it becomes a leading player in tokenization and institutional finance, and if it successfully emerges as a cornerstone in the future of global financial infrastructure.

VII Investment Opportunity

Bitwise Physical XRP ETP (GXRP)

Investment Objective

The Bitwise Physical XRP ETP provides a simple, robust, and cost-efficient solution for gaining investment exposure to the XRP token. With 100% full backing, GXRP ensures transparency, tradability, and professional cold-storage custody, delivering a secure and reliable way to invest in XRP.

Institutional-Grade Quality and Efficiency

Domiciled in Germany, the ETP delivers a compliant and trusted gateway to XRP investment opportunities. Bitwise's physical ETP structure minimizes issuer-default risk through an independent trustee who holds security interest on all XRP assets in custody exclusively for the benefit of investors.

Key Product Details

Primary Ticker	GXRP
ISIN	DE000A3GYNB0
WKN	A3GYNB
TER	1.95% p.a.
Asset Class	Digital Assets
Underlying Exposure	Ripple (XRP)
Strategy	Delta-One
Replication Method	Physically allocated (100% fully backed)

The Risks

- Investors' capital is at risk. Investors may not get back the amount originally invested and should obtain independent advice before making a decision.
- Any decision to invest should be based on the information contained in the relevant prospectus.
- ETP securities are structured as debt securities, not as equity.
- ETPs trade on exchanges like securities. They are bought/sold at market prices that may be different to the net asset value of the ETP.

Please note, this is not an exhaustive list, and other risks may apply. Please consult the key investor information document and prospectus for more details.

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