Axelar Network

About

Axelar network is the full-stack interoperability layer for Web3. The network enables blockchain as a new kind of development platform, integrating diverse networks into a seamless "Internet of blockchains." Application users access any digital asset or application, with one click. Developers work with a simple API and access an ecosystem of tools and service providers.

Metrics

Since network launch in Feb 2022, Axelar network has processed nearly $10B in transaction volume across 1.5M transactions. Today, Axelar connects 64 different blockchains across EVM and Cosmos. Integrations with Solana, Sui, Aptos, Ripple and Stellar are in progress, among others.

Security

1. The Axelar Network is secured by a decentralized validator set (75+ validators). The security model mimics the model of the chains which Axelar secures, and has been battle tested across public networks for 2+ years. The full list of validators can be found underline.

2. In a private deployment of Axelar, a customized set of validators can be used to secure the network, coupled with customized, private relayers that can pass information to/from the secured chains.

   a. Given Axelar's modular architecture, the various pieces of the Axelar stack can be tailored to fit needs of the specific use case / client (customized validators, encryption, private relayers, etc.).

3. Security at Axelar blog post: https://axelar.network/blog/security-at-axelar-core

Payment model

1. In the public, permissionless Axelar, the network is secured by $AXL and a proof-of-stake security model, the same security model that underpins many of the networks that Axelar connects (Ethereum, Solana, etc).

   a. Payments can be abstracted through Axelar's Gas Service and Transaction Pricing: https://docs.axelar.dev/dev/gas-service/pricing, enables payment to the network in any asset.

2. In a private deployment, Axelar's modular stack allows for the gas (payment) token and payment amount to be pre-defined. For example, the token can be set to some form of a stablecoin (e.g. USDC) and can be customized via auto-payments through a payments contract powered by an account abstraction

flow described here: https://usa.visa.com/solutions/crypto/rethink-digital-transactions-with-account-abstraction.html

Use Cases

1. **Multi-chain asset issuance**: stablecoins, RWA issuers, and DeFi protocols leverage the Axelar network stack for deployments onto multiple chains

   a. Select partners: Circle USDC, Lido (largest DeFi protocol), Frax (stablecoin), Ondo (largest tokenizer of on-chain treasuries), Mountain Protocol.

2. **Public/private blockchain connections:** in addition to connecting any/all public chains, companies leverage the Axelar network stack to enable interoperability with their private chains.

   a. Select partners: JP Morgan (Onyx), Provenance (largest issuer of on-chain HELOCs), Microsoft

3. **Payments / onramp:** projects leverage Axelar network to onramp assets from any chain into protocols, as well enable payments using any asset, on any connected chain.

   a. Select partners: Centrifuge (tokenized on-chain credit marketplace), DYDX (onboarding)

Competitive Landscape

- From a functionality perspective, among the top message passing infrastructure providers (Axelar, LayerZero, Wormhole), there is nothing that any player do that the others cannot. This includes: cross-chain deployments, custom fee contracts, and mint/burn vs. mint/lock.

- The primary difference exists in the architectural construct of each solution. Axelar and Wormhole operate what are known as "hub-and-spoke" models, where LayerZero and Chainlink operate what are known as "point-to-point" models.

- There are a few benefits to a hub-and-spoke interoperability architecture:

- Security by a decentralized validator set. This prevents the most common bridge attack vector, namely compromise of custodial keys.

- Global security features can be implemented on top of the hub.

  - Global rate limits / circuit brakers: On the hub, you can set rate limits specific to each individual connected chain. If a chain breaks, the damage is isolated to the rate limit of that chain. With pairwise connections, you have to set individual rate limits per pairwise connection. If a chain breaks, the damage is the cumulative of all rate limits across all connections. 10 connections to a single chain would lead to 10x the damage.

  - Damage isolation: if a chain breaks, it cannot pass conflicting messages to other chains, as the hub filters for that. Subsequently, the faulty chain can be disconnected from every other chain simply by disabling its connection to the hub.

- Scalability through many-to-many connectivity:

  - New chains are added to Axelar through a single point of integration, by creating a connection to Axelar. New chains can send messages to any previously added chain, by routing through the hub (Axelar network).

  - Adding new connections to Axelar will soon by permissionless, through the smart contract that will launch on Axelar in Q2.

- Cost efficiency: Financial institutions that run their own chains typically want to permission who can write to their own chain. When they connect to Axelar, they can set up one permissioned relayer, that can pass messages between their chain and Axelar. Once the message is delivered to Axelar (the hub), it gets routed to the correct destination through the relayers associated with the destination connection. With pairwise connections, the financial institutions would have to maintain multiple connections, substantially increases cost and the attack surface of the system.

- Dev tooling: On the Axelar chain, we are building an orchestrator that developers can use to deploy and manage applications across multiple

chains. For example, an application developer who wants to launch on 10 chains, will be able to write their code on Axelar network, and subsequently decentralized services will automate deployment and management on the application across 10 chains. A developer will be able to manage multi-chain deployments through a single place. This is already live for the use case of cross-chain tokens.

Case Studies

- Uniswap Bridge Assessment Report: Axelar network was 1 of 2 providers (the other being Wormhole) to meet the committee's security standards

- JP Morgan, Apollo leveraging Axelar in a pilot to revolutionize asset + wealth management
  - https://www.jpmorgan.com/onyx/project-guardian

- Microsoft and Axelar partner to explore private / public blockchain deployments, and how to leverage blockchain across Microsoft's AI solutions

- Circle CCTP leveraging Axelar network to unlock composable USDC

- Ondo Finance leverages Axelar network to enable CCTP-like functionality for tokenized stablecoin. Ondo bridge docs: https://docs.ondo.finance/tools/ondo-bridge

- Lido Finance selects Axelar network as first and only 3rd party interoperability solution for Cosmos, and selects Axelar + Wormhole for interoperability with BNB

Funding

Axelar has raised ~$100M, most recently in a $35M Series B from Polychain Capital and Dragonfly Capital.

Team

Initial development team includes Sergey Gorbunov and Georgios Vlachos, who were on the initial development team for Algorand. Previously, Sergey was a professor at the University of Waterloo, and completed his PhD from MIT,

designing cryptographic protocols and systems.

Resources

Website: https://axelar.network/

Block Explorer: https://axelarscan.io/

Docs: https://docs.axelar.dev/