



Tldr:

- Axelar network is built from the ground up using Cosmos SDK to interoperate between Cosmos chains, EVM chains, Bitcoin, and other PoS and PoW chains.
- It offers universal many-to-many routing capabilities.
- It offers a universal approach to onboarding and translation of messages across chains.
- [Satellite](#) is a cross-chain asset transfer app built on top of the network. Over \$37m in TVL and 100k cross-chain transactions in just a few weeks.
- It takes less than 10 minutes to integrate a new EVM chain with all other interconnected chains on the Axelar network.
- Axelar network components can be reused to build other connections in an efficient way.
- One-time addresses can be generated to transfer assets from any wallet or even centralized exchanges via standard transactions.
- The team has deep roots in cryptography, consensus and distributed systems, and is dedicated to working on interoperability and making it user and dApp developer friendly.
- Axelar has raised over \$65m USD to support development for multiple years.
- You can view all network activity on <https://axelarscan.io> and users can view the status of their cross-chain transfers here: <https://crosschain.axelarscan.io/> (beta).
- Axelar will commit at least 1% of its native token (AXL) towards incentives on Osmosis.

Demo videos:

- [Satellite demo.](#)
- [Satellite + Osmosis testnet integration](#) [head to [discord](#) #testnet to get test tokens]
- [USDC erc-20 command-based transfer from Ethereum to Osmosis.](#)
- [Axelar - Avalanche 10m integration video.](#)

How does your bridge work (at a medium or high level of detail)? What are its best features? Is it permissionless, non-custodial, trust-minimized, and decentralized? What additional trust assumptions does it put upon Osmosis users? If there are new trusted parties, how are/were they chosen?

Axelar is the full-stack decentralized transport layer, governed by permissionless consensus, providing universal composability of programs with any-to-any cross-chain capability. Users access deepened pools of liquidity, seamlessly. Developers do not need to speak any custom language; they do not need to make any changes to their chains or UIs.

The Axelar Network has three key components across two functional layers.

The first is the actual network itself, composed of a set of validators that are responsible for maintaining the network and executing transactions. The validators run the cross-chain gateway protocol, which is a multi-party cryptography overlay that sits on top of a Layer 1 blockchain. They are responsible for performing read and write operations to gateway accounts deployed on connected external chains, voting and attesting to events on those chains.

The second are the gateways, which are effectively smart contracts that provide the connectivity between the Axelar Network and its interconnected external chains. Validators monitor gateways for incoming transactions, which the validators READ. They then come to consensus on the validity of that transaction and, once agreed, they WRITE to the destination chain's gateway to execute the cross-chain transaction. The funds are sent to a generated address on the source chain and are locked, and a corresponding asset is minted on the destination chain. The validators and gateways compose the core infrastructure layer.

Sitting on top of the validators and gateways are the APIs that enable developers to access the tools and infrastructure enabled by those validators and gateways. This is the application-development layer that applications will interact with to go cross-chain. It uses the underlying core infrastructure layer to pass customizable, generalized messages across chains. These APIs are how developers can easily lock, unlock and transfer assets between any two addresses on any two blockchain platforms, execute cross-chain application triggers, and more generally handle any cross-chain requests.

What are the liveness and/or censorship resistance guarantees of your bridge solution (including both the protocol itself and the interfaces used to interact with it)?

- Axelar Network is based on Cosmos SDK and enjoys similar PoS liveness and security guarantees (67% corruption threshold).
- Cross-chain functionalities are modularized, allowing customization for maximal scalability, costs, and security optimizations.

- For instance, the gateway contracts are deployed with two sets of keys: the master key and a secondary key. Each key has a “policy” associated with it that defines which validators are included in the keyset. In the current instantiation, the master keyset on existing EVM chains has a “stake-by-weight & all & 55% safety” policy, which means all validators are weighted by stake and included to guard the keyset with a 55% safety threshold. Only this key can perform key-rotations on the network. A secondary key with a policy, “one share each & top-20 & 55% safety,” is used to authorize individual burns and mints. Top-20 validators from the active set are chosen to maintain it, each receiving a single share; 11 of them must authorize each request. The secondary key allows us to minimize the gas cost, while simultaneously ensuring that even if the stake ends up too concentrated among top validators, we end up with many nodes still required to approve requests.
- All key policies / parameters are customizable on the network via governance protocols.

Describe your current and future UX. What concrete steps are you taking to get there, and what is the timeline? Will users be able to deposit/withdraw assets directly between Ethereum and Osmosis? Or will they have to make a transaction on an intermediary blockchain?

- Our end goal is to make sure that users in any ecosystem can interact with any asset, any user and any application in any other ecosystem.
- Initially, users will be able to use satellite.axelar.network to move their assets from Ethereum (and other chains) to Osmosis and back. Users don't need to pay fees on the Axelar network. Osmosis users won't have to interact with the Axelar network at all.
- Our service layer, built between the network and the front end, will ask the user to pay the fee on the source chain in the asset they're transferring and all intermediary fees / relaying will be taken care of transparently by the services.
- Furthermore, we will be opening up a simple SDK that any Osmosis dApp can integrate, allowing users to deposit / withdraw directly to Osmosis from any other chain. Essentially, this API allows users to generate a one-time deposit address; users just need to send a regular transaction to this deposit address from a wallet of their choosing. The Axelar network and services around it will handle the finalization, routing, relaying, fees, etc. Users will get the experience of centralized exchanges while interacting with open protocols and networks.

How does your bridge plan to support itself economically? Will it be self-supporting? When?

The Axelar team has raised over \$65m in funding to continue developing the project for many years. Here is our [announcement](#) detailing the most recent round of funding.

In 2022, Axelar is launching the Axelar governance token (AXL), which will be used to drive ecosystem adoption, incentives and security of the network. It supports three critical functions.

- AXL is a medium for transaction fees and any other fees for network usage, paid by users to the validators that run the network.
- AXL is used by holders and their proxies to deposit stake and exercise governance over proposals (such as a parameter change or protocol upgrade).
- AXL enables incentives to support the decentralized Proof-of-Stake consensus that secures the network and validates transactions on chain. Validators receive AXL rewards as incentives to continue to secure the network. These incentive rewards are distributed programmatically, per rules encoded in network protocols, and are inflationary, i.e., each protocol reward increases the total token supply.
- AXL is used to reward ecosystem builders and community contributors.

The token economics for AXL are geared towards the creation of a token economy that supports Axelar Network in achieving the following key outcomes.

1. **Security.** A proper incentives model with healthy staking rewards that encourages a wide validator set to operate secure nodes.
2. **Decentralization.** A token distributed across a wide set of holders who will delegate to a decentralized set of validators and contribute to governance decisions.
3. **Longevity.** The token economics are designed to encourage general maintenance of all critical Axelar-related processes.
4. **Ecosystem growth.** The token incentivizes dApp builders to use Axelar APIs for cross-chain development.

Is your bridge planning to offer liquidity mining incentives? If so, please describe the prospective program.

- Axelar will commit at least 1% of its initial token supply towards incentive programs with Osmosis.
- The incentives can be supplied towards OSMO pairs with major Ethereum assets, as well as native L1 assets, for example, AVAX, BTC, DOT, etc. The objective is to make Osmosis a leading hub of economic activity across the wider universe of blockchain ecosystems and an on-ramp for many users to get external assets.

Who owns the bridge? Is there a token, vested shares, etc? Who are the stakeholders?

Axelar is a Cosmos SDK-based chain, secured and governed by its native AXL token. The token will be distributed across the team and operating company (~29.5%), backers (~29.5%), and for community, incentives and other programs (41%). The team token allocation is unlocked over four years. Backers' tokens are unlocked over two years.

What costs will users of the bridge experience, and how do you plan to minimize these?

- Using the Axelar stack, users only pay the fee in the asset they transfer on the source chain, and all other fees (relaying / intermediary / destination chains) are covered by services around the network.
- Gas costs: Axelar will initially set a flat fee on each transfer, aiming to exactly cover gas costs on source + destination chain. Because users only pay gas on the source chain, the gas cost on the destination chain may increase by the time a user posts a transaction. In this case, Axelar Foundation will subsidize transfer costs. Axelar foundation may consider subsidizing fees even further from its treasury during the bootstrapping phase.
- All transactions are batched, so many transactions may be submitted to interconnected chains at once, reducing the gas costs for the users.
- Axelar has an active implementation of threshold signatures that can be used to replace individual validator signatures and further save gas costs. It's not yet deployed in EVM contracts, and there are many other code-level gas optimizations we want to ship.

How will the bridge and any related contracts, modules, and chains be secured? How could funds be attacked, and what mitigation strategies are in place? Are there any other recovery systems to help recover any sort of locked funds?

- Achieving strong robustness and security guarantees requires the right design, implementation, and thoughtful processes in case of emergencies.
- The Axelar network isolates functionalities in modules at the Cosmos SDK level, e.g., one module for bitcoin, another for EVM chains, another for IBC transfers, etc. Each module is responsible for parsing incoming transactions from a given source chain, and generating transactions for the destination chains. They're isolated from each other and messages from one to another can only be passed through a "router" module between them that has a well-defined command set for pushing messages to outgoing queues.
- If there is an issue with one or all chains, there is a special "freeze" transfers command that can be supplied by the governance multisig on chain to pause processing requests to/from a specific chain.
- Smart contracts on the bridged chains are pretty minimal: they're used for key-rotations, mint/burn operations.
- Standard erc-20's are used for mint tokens on the destination chains. An offline governance multisig can be used to freeze operations on the erc-20 contract in case of a compromise.
- The governance multisigs may be completely eliminated overtime or decentralized to larger communities as the system goes through more tests of time.
- Our erc-20 contracts also have a *rate-limit* functionality that allows to minimize how much funds may be stolen in case of an attack. This is not enabled on the mainnet at the

moment, but can be considered along with other “access control” policies to minimize attacks.

Are there any sort of insurance funds or anything of the like to compensate users in the case of stolen or irrecoverable funds?

At least 5% of the AXL supply will be allocated towards an insurance fund and insurance programs.

When users experience problems, what is your plan to provide easily reachable support?

The Axelar Discord server has multiple technical mods available 24/7 to support users on technical issues. The Axelar team and community will be happy to support similarly on the Osmosis Discord, so users won't have to be redirected to the Axelar Discord. First now, we have a discord ticketing system, where our moderators review issues and help users, and we're opening up a ZenDesk ticketing system starting next week.

How would you describe the likely network effects of your bridge and your team's reputation within the ecosystems you are bridging, both among DeFi users and among developers?

- Axelar is integrating closely with the Terra, Avalanche and Polkadot core teams, as well as developers of top applications in multiple ecosystems. A flourishing developer community is already building tools around Axelar, like an Axelar block explorer, axelarscan.io. These collaborations have resulted in the pairs listed below, which are incentivized by the Terra community, the Avalanche Foundation and the relevant DEXs, themselves.
- AxelarUST is the 2nd most liquid asset on Pangolin with AVAX incentives provided by Avalanche Foundation: [Pangolin Analytics](https://pangolin.com).
- AxelarUST pool on Trader Joe, incentivized jointly with LUNA incentives: [Farm | Trader Joe](https://traderjoe.io).
- Axelar is already producing substantial IBC traffic with only a handful of incentive programs; within a week of deployment, Axelar has reached a top-five spot in IBC volume: [Map of Zones](https://axelar.network).
- Additional asset pairs through Axelar are about to launch on Moonbeam, Fantom and more chains.
- It takes 10 minutes to onboard a new EVM chain, once validators support it.
- Reusable building blocks like multi-party protocols and finality gadgets can be used to build other integrations.
- As a result of these ecosystem-wide efforts, over 100k transactions have been executed through the Axelar network in the last 2 weeks, averaging close to 8k transactions per day.

How would you describe your incentive-alignments with the Osmosis community, now and in the future?

Axelar's vision is for a Web3 in which developers choose to build on the best platforms satisfying their needs while enabling users to interact with any application on any platform in a seamless UX. Achieving this requires building the right set of interoperability protocols and simple APIs for developers to connect to. Providing these developer tools is a key part of Axelar's mission and will be critical to allow users to interact with many chains with one click from their wallets.

The Osmosis community consists of top builders in the Cosmos ecosystem, and has proven its commitment to shipping user-friendly UX. We are thrilled for the opportunity to jointly build this shared vision and committed to building with simple UX as one of the core guiding principles.

Similarly, how would you rate your team on ability to quickly ship excellent upgrades, patches, and new features? How focused is the product towards bridging Cosmos and EVM assets? Is it the primary focus of the project or one of many features and/or projects that the development team is building?

We raised funding and built the team to work on one problem: simple, secure, and universal interoperability. It's where our team excels and where we'll focus.

- Co-founders Sergey Gorbunov and Georgios Vlachos were founding team members at Algorand, and are winners of multiple academic awards in cryptography.
- The team has recruited heavily from MIT and the University of Waterloo, where both founders have affiliations.
- Core engineer Joao Sousa built the first practical implementation of Byzantine consensus, BFTSmart, which has served as inspiration for many researchers over the years.
- Sergey Gorbunov designed and published many core cryptographic protocols. He also led the effort to standardize BLS signatures, and the standard is now adopted as draft in CFRG and was followed by Ethereum2.0 implementations and others.
- We have weekly scheduled upgrades for the front-end app and services around the network; every few weeks, we're performing network upgrades. Our goal is to build and ship, and engineering operations are structured around this goal.
- Axelar was built using the Cosmos SDK because its mission is aligned with the Cosmos community: we think application-specific chains are necessary to scale the ecosystem, and interoperability between them is a must. As such, our first go-to-market is to bridge Cosmos chains with all other ecosystems. That's why the stack supports IBC from Day one.

Here is our [team page](#).

What is your timeline for adding other EVM chains beyond Ethereum? Do you have any plans for non-EVM chains?

- The network is already connected to Avalanche, Polygon, Moonbeam, Ethereum and Fantom. We are adding all major EVM chains over the next couple months.
- Bitcoin and Dogecoin are on the roadmap, with Bitcoin live on testnet for months now. (We're migrating to a new threshold signature scheme on Bitcoin.)
- We built a modular platform, where others can reuse the core building blocks (multi-party protocols, validator oracle networks, routing features) to build new connections in an easy way. For instance, it takes less than 10 minutes to onboard a new EVM chain through the decentralized stack and interconnect it with all other ecosystems.



<https://axelarscan.io/crosschain>

What is your timeline for adding non-token cross-chain messages (e.g., Interchain accounts and NFT transfers)?

The Axelar team is working on general message-passing across EVM and Cosmos chains, extending IBC to EVM chains. IBC packet format semantics can be used to communicate cross-chains. Targeted release on mainnet is mid-Q2 '22. The Axelar core team is also working

on useful application-layer primitives that developers can easily connect with, in order to implement cross-chain communication (cross IBC / EVM interchain accounts, etc.).

Anything else should we know?

- Audits: Ackeblockchain, Cure53, NCC, Oak Security, Commonprefix labs and independent researchers.
- Community-written article: "[Axelar Ushers in the Crypto Super App.](#)"
- [Interview with Chjango Unchained.](#)