Arbitrum glossary

Active Validator

A staked Validator that makes disputable assertions to advance the state of an Arbitrum chain or to challenge the validity of others' assertions. (Not to be confused with the Sequencer).

Address Alias

An address deterministically generated from an L1 contract address used on L2 to safely identify the source of an L1 to L2 message.

Arb Token Bridge

A series of contracts on an Arbitrum chain and its underlying chain that facilitate trustless movement of ERC-20 tokens between the two layers.

Arbified Token List

A token list that conforms to Uniswap's token list specification ; Arbified lists are generated by inputting externally maintained list (i.e., coinmarketcap's list) and outputting a list that includes all of the instances of token contracts on the Arbitrum chain bridged via the canonical Arb Token Bridge from tokens on the inputted list. (See code here .)

Arbitrum

A suite of Ethereum layer-2 scaling technologies built with the Arbitrum Nitro tech stack that includes Arbitrum One (a live implementation of the Arbitrum Rollup Protocol) and Arbitrum Nova (a live implementation of the Arbitrum AnyTrust Protocol).

Arbitrum AnyTrust Chain

An Arbitrum chain that implements the Arbitrum AnyTrust Protocol .

Arbitrum AnyTrust Protocol

An Arbitrum protocol that manages data availability with a permissioned set of parties known as the Data Availability Committee (DAC) . This protocol reduces transaction fees by introducing an additional trust assumption for data availability in lieu of Ethereum's Trustless data availability mechanism. Arbitrum Nova is an example of an AnyTrust chain; Arbitrum One is an alternative chain that implements the purely trustless (and more L1-gas intensive) Arbitrum Rollup Protocol .

Arbitrum Bridge UI

Web application built and maintained by Offchain Labs for user-interactions with the Arb Token Bridge ; visit it here .

Arbitrum chain

A blockchain that runs on the Arbitrum protocol. Arbitrum chains are EVM compatible, and use an underlying EVM chain (e.g., Ethereum) for settlement and for succinct fraud-proofs (as needed). Arbitrum chains come in two forms: Arbitrum Rollup Chain s and Arbitrum AnyTrust Chain s.

Arbitrum Classic

Old Arbitrum stack that used custom virtual machine ("AVM"); no public Arbitrum chain uses the classic stack as of 8/31/2022 (they instead use Arbitrum Nitro).

Arbitrum Full Node

A party who keeps track of the state of an Arbitrum chain and receives remote procedure calls (RPCs) from clients. Analogous to a non-staking L1 Ethereum node.

Arbitrum Nitro

Current Arbitrum tech stack; runs a fork of Geth and uses WebAssembly as its underlying VM for fraud proofs.

Arbitrum Nova

The first Arbitrum AnyTrust Chain running on Ethereum mainnet. Introduces cheaper transactions; great for gaming and

social use-cases. Implements theArbitrum AnyTrust Protocol , not theArbitrum Rollup Protocol protocol. Governed by theArbitrum DAO .

Arbitrum One

The firstArbitrum Rollup Chain running on Ethereum mainnet. Great for decentralized finance and other use-cases that demand strong security guarantees. Governed by theArbitrum DAO .

Arbitrum Orbit

Arbitrum Orbit refers to the ability for anyone to permissionlessly deployLayer 3 (L3) chains on top of ArbitrumLayer 2 (L2) chains.

Arbitrum Rollup Chain

AnArbitrum chain that implements theArbitrum Rollup Protocol .

Arbitrum Rollup Protocol

A trustless, permissionless Arbitrum protocol that uses its underlying base layer for data availability and inherits its security. This protocol is implemented by ourArbitrum One chain.

ArbOS

Arbitrum's "operating system" that trustlessly handles system-level operations; includes the ability to emulate the EVM.

Assertion

A staked claim by an ArbitrumValidator . An assertion may, e.g., propose a newRBlock , or may be a step in aChallenge .

Batch

A group of Arbitrum transactions posted in a single transaction on theUnderlying Chain into theFast Inbox by theSequencer .

Blockchain

A distributed digital ledger that is used to record transactions and store data in a secure, transparent, and tamper-resistant way, notably in cryptocurrency protocols.

BLS Signature

A cryptographic scheme that allows multiple signatures to be aggregated and compacted into one efficiently verifiable, constant-sized signature. Used in theArbitrum AnyTrust Protocol for theData Availability Committee (DAC) 's signatures.

BOLD

Short for "Bounded Liquidity Delay"; latest version of the ArbitrumChallenge protocol designed to eliminatedelay attack vectors (seehere for more). Not currently on mainnet.

Bridge

A set of smart contracts for sendingCross-chain message s between blockchains. EveryArbitrum chain includes a bridge to/from itsParent chain .

CAP Finance

Widely considered the most degen community on Arbitrum.

CAP is a decentralized trading protocol. It's designed to be fast and easy to use by anyone.

Chain Owner

An entity (i.e., a smart contract) with affordance to carry out critical upgrades to an Arbitrum chain's core protocol; this includes upgrading protocol contracts, setting core system parameters, and adding and removing other chain owners.

Chain state

A particular point in the history of an Arbitrum chain . A chain's state is determined by applying Arbitrum state-transition function to sequence of transactions (i.e., the chain's history).

Challenge

When two Staker s disagree about the correct verdict on an Assertion , those stakers can be put in a challenge. The challenge is refereed by the contracts on the underlying chain. Eventually one staker wins the challenge. The protocol guarantees that an honest party will always win a challenge; the loser forfeits their stake.

Challenge Period

Window of time (1 week on Arbitrum One) over which an asserted RBlock can be challenged, and after which the RBlock can be confirmed.

Challenge protocol

The protocol by which RBlock s are submitted, disputed, and ultimately confirmed. The Challenge Protocol guarantees that only valid RBlocks will be confirmed provided that there is at least one honest Active Validator .

Child chain

An Arbitrum Chain that settles to an underlying Parent chain . For example, Arbitrum One and Arbitrum Nova are child chains of Ethereum.

Client

A program running on a user's machine, often in the user's browser, that interacts with contracts on an Arbitrum chain and provides a user interface.

Confirmation

The decision by an Arbitrum chain to finalize an RBlock as part of the chain's history. Once an RBlock is confirmed its L2 to L1 Message s (e.g., withdrawals) can be executed.

Cross-chain message

An action taken on some chain A which asynchronously initiates an additional action on chain B.

Custom Arb-Token

Any L2 token contract registered to the Arb Token Bridge that isn't a standard arb-token (i.e., a token that uses any gateway other than the StandardERC20 gateway).

Custom gateway

Any Token Gateway that isn't the StandardERC20 gateway .

dApp

Short for "decentralized application." A dApp typically consists of smart contracts as well as a user-interface for interacting with them.

Data Availability Certificate

Signed promise from a Data Availability Committee (DAC) attesting to the availability of a batch of data for an Arbitrum AnyTrust Chain .

Data Availability Committee (DAC)

A permissioned set of parties responsible for enforcing data availability in an Arbitrum AnyTrust Protocol chain. See Introducing AnyTrust Chains: Cheaper, Faster L2 Chains with Minimal Trust Assumptions to learn more.

Defensive Validator

A Validator that watches an Arbitrum chain and takes action (i.e., stakes and challenges) only when and if an invalid Assertion occurs.

Delayed Inbox

A contract that holdsParent chain initiated messages to be eventually included in theFast Inbox . Inclusion of messages doesn't depend on theSequencer .

Dev-Tools Dashboard

Web application built and maintained byOffchain Labs for developers and users to debug Arbitrum transactions; i.e., executing or checking the status ofCross-chain message s; visit itthere .

Dissection

A step in theChallenge protocol in which two challenging parties interactively narrow down their disagreement until they reach aOne Step Proof .

Dopex

A shiny gem in the Arbitrum community.

Commonly associated with the esteemed Diamond Pepe's NFT and Dopex community. Dopex is a decentralized options exchange protocol on Arbitrum.

☕ Espresso

Project partnering withOffchain Labs for research and development aroundSequencer transaction ordering andShared Sequencing technology.

Ethereum Wallet

A software application used for transacting with the EthereumBlockchain .

EVM+

The paradigm introduced byStylus in which Arbitrum's EVM compatibility is preserved while new features and improvements are introduced.

Fair Ordering Algorithm

BFT algorithm in which a committee comes to consensus on transaction ordering; current single-partySequencer on Arbitrum may eventually be replaced by a fair-ordering committee.

Fast Exit / Liquidity Exit

A means by which a user can bypass an Arbitrum chain'sChallenge Period when withdrawing fungible assets (or more generally, executing some "fungible" L2 to L1 operation); for trustless fast exits, a liquidity provider facilitates an atomic swap of the asset on L2 directly to L1.

Fast Inbox

Contract that holds a sequence of messages sent by clients to an Arbitrum Chain; a message can be put into the fast Inbox directly by theSequencer or indirectly through theDelayed Inbox .

Force-Inclusion

Censorship resistant path for including a message into an Arbitrum chain via theDelayed Inbox on itsParent chain ; bypasses any Sequencer involvement.

Fraud proof

The means by which anActive Validator proves to its underlying chain that an invalid state transition has taken place.

Gas Price Floor

Protocol-enforced minimum gas price on an Arbitrum chain; currently 0.1 gwei onArbitrum One and 0.01 gwei onArbitrum Nova .

Gateway Router

Contracts in the Arb Token Bridge responsible for mapping tokens to their appropriate Token Gateway .

Generic-Custom Gateway

A particular Custom gateway via which an L1 token contract can be registered to a token contract deployed to L2. A useful alternative to the StandardERC20 gateway for projects that wish to control the address of their L2 token contract, maintain L2 token contract upgradability, and for various other use-cases.

Geth

An execution-layer client that defines the Ethereum state transition function and handles network-layer logic like transaction memory pooling. Arbitrum Nitro utilizes a fork of Geth to implement Arbitrum's state transition function.

GMX

If you've seen some blueberries wandering around on crypto Twitter, you might wonder .. where did they come from?

The iconic blueberries come from the community of the decentralized exchange, GMX.

Ink

The equivalent of gas in the Stylus vm. Ink is introduced for finer granularity than gas offers since Stylus's operations are considerably cheaper than their EVM analogs.

L2 Block

Data structure that represents a group of L2 transactions (analogous to L1 blocks).

L2 to L1 Message

A message initiated from within an Arbitrum chain to be eventually executed on Layer 1 (L1) (e.g., token or Ether withdrawals). On Rollup chains like Arbitrum One , the Challenge Period must pass before an L2 to L1 message is executed.

Layer 1 (L1)

The base protocol and underlying blockchain of the Ethereum network. Responsible for maintaining the integrity of the distributed ledger and executing smart contracts. Contains both Ethereum's execution layer and consensus layer.

Layer 2 (L2)

Trustless scaling solutions built on top of Ethereum's Layer 1 (L1) base protocol, such as state channels, plasma chains, optimistic rollups, and ZK-rollups. Layer 2 solutions aim to increase scalability and reduce the cost of transactions on Ethereum's Layer 1 without introducing additional trust assumptions.

Layer 3 (L3)

An Arbitrum chain whose core contract reside on an Arbitrum Layer 2 (L2) chain.

Native Fee Token

An ERC-20 token used as the native currency for gas fees on an Arbitrum chain (i.e., as opposed to using Ether) Arbitrum Orbit introduced the option for chains to use native fee tokens.

Offchain Labs

The initial builders Arbitrum; current contributors to the Arbitrum ecosystem and service providers to the Arbitrum DAO . Offchain also runs and maintains the Sequencer s for Arbitrum One and Arbitrum Nova .

One Step Proof

Final step in a challenge; a single operation of the Arbitrum VM (WASM) is executed on the underlying chain, and the validity of its state transition is verified.

Outbox

An L1 contract responsible for tracking L2 to L1 Message s, including withdrawals, which can be executed once they are confirmed. The outbox stores a Merkle Root of all outgoing messages.

Parent chain

EVM compatible chain that acts as the settlement layer for one or more Arbitrum Chains (aka Child chain). E.g., Ethereum is the parent chain of both Arbitrum One and Arbitrum Nova. Parent chain is synonymous with "underlying chain."

☠ Pirate Nation

If you sail in the deep blue seas of Arbitrum, you may encounter some ships with pirate flags along the way ARRGG!

The pirate flag originates from the Pirate Nation community. Pirate Nation is a game filled with high seas adventure, treasure, fun, and unexpected surprises.

Portal

A web application maintained by Offchain Labs showcasing the Arbitrum ecosystem; visit it here .

RBlock

An assertion by an Arbitrum Validator that represents a claim about an Arbitrum chain's state.

Reorg

A situation in which transactions on a chain that were at some point considered accepted then get rejected. In the context of an Arbitrum chain, once transactions are posted in the chain's Fast Inbox , the only way the chain can experience a reorg is if its Underlying Chain itself reorgs. Of note, Fraud proof s do not cause reorgs.

Retryable Autoredeem

The "automatic" (i.e., requiring no additional user action) execution of a Retryable Ticket on an Arbitrum chain.

Retryable Redeem

The execution of a Retryable Ticket on L2; can be automatic (see Retryable Autoredeem) or manual via a user-initiated L2 transaction.

Retryable Ticket

An L1 to L2 cross chain message initiated by an L1 transaction sent to an Arbitrum chain for execution (e.g., a token deposit).

Reverse Token Gateway

A Token Gateway in which the Child chain gateway contract escrows and releases tokens, which the Parent chain Gateway contract mints and burns tokens. This in the inverse to how "typical" gateways work.

Sequencer

An entity (currently a single-party on Arbitrum One) given rights to reorder transactions in the Fast Inbox over a fixed window of time, who can thus give clients sub-blocktime Soft Confirmation s. (Not to be confused with a Validator).

Sequencer Feed

Off chain data feed published by the Sequencer which clients can subscribe to for Soft Confirmation s of transactions before they are posted in Batch es.

Shared Sequencing

A protocol design space in which multiple rollups use the same entity as their Sequencer ; potential benefits include enhanced interoperability and credible neutrality.

Smart Contract

A computer program whose operations are defined and executed within a blockchain consensus protocol.

🐵 Smolverse

Near the core of Arbitrum community is Smolverse, a world filled with Smol Brains and Smol Bodies.

If you see any Smol's with giga brains, swole arms or hear the sound of "EEEE" in the Arbitrum community, you've encountered the Smol Brains and Smol Bodies.

Soft Confirmation

A semi-trusted promise from the Sequencer to post a user's transaction in the near future; soft-confirmations happen prior to posting on the Parent chain , and thus can be given near-instantaneously (i.e., faster than the parent chain's block times)

Speed Limit

Target computation limit for an Arbitrum chain. Arbitrum One and Arbitrum Nova currently target 7,000,000 gas / second. When computation exceeds this limit, fees rise, ala EIP-1559 .

Staker

A Validator who deposits a stake (in Ether on Arbitrum One and Arbitrum Nova) to vouch for a particular RBlock in an Arbitrum Chain. A validator who stakes on a false RBlock can expect to lose their stake. An honest staker can recover their stake once the RBlock they are staked on has been confirmed.

Standard Arb-Token

An token contract on an Arbitrum chain deployed via the StandardERC20 gateway ; offers basic ERC20 functionality in addition to deposit / withdrawal affordances.

StandardERC20 gateway

Token Gateway via which any underlying chain's ERC20 token can permissionlessly bridge; the StandardERC20 gateway contracts deploy a Standard Arb-Token on the Child chain for each bridged token.

Stylus

Upgrade to the Arbitrum Nitro virtual machine that allows smart contract support for languages like Rust and C++ by taking advantage of Nitro's use of WASM. Currently on testnet (read more).

Tales of Elleria

The bow and arrow are commonly associated with the Hero's of Tales of Elleria.

Jump into the world of Elleria and go on adventures.

Time boost

A proposed (not currently live) transaction policy in which users can pay a fee to the Sequencer for a small ordering advantage. See here for more.

Toadstoolz

Hidden in the Croakshire, you will find the friendly Toadstoolz.

The iconic Toads of Arbitrum love to hunt BUGZ and collect NFTs. !CROAK

Token Gateway

A pair of contracts in the token bridge — one on the Parent chain , one on the Child chain — that provide a particular mechanism for handling the transfer of tokens between layers. Token gateways currently active in the bridge include the StandardERC20 gateway , the Generic-Custom Gateway , and the WETH Gateway .

TownStory

If you see some homes along your road trip in the Arbitrum ecosystem, you've made it to TownStory.

Build a warm and prosperous town with friends in TownStory.

Transaction

A user-initiated interaction with a Blockchain. Transactions are typically signed by users via wallets and are paid for via transaction fees.

Treasure DAO

While exploring the Arbitrum ecosystem, you may see some shining stars.

The iconic stars symbolize the magic of Treasure DAO. Treasure DAO is the decentralized gaming ecosystem connecting games and players on Arbitrum.

Trustless

In the context of Ethereum, trustless refers to the ability of a system to operate without reliance on a central authority or intermediary. Instead, users place their trust in math and protocols.

This is achieved through the use of cryptographic techniques and decentralized consensus mechanisms that let users verify the integrity of network transactions using open-source software. Trustless systems are considered to be more secure and resistant to fraud or tampering because they don't rely on a single point of failure that can be exploited by attackers.

Underlying Chain

Synonymous withParent chain .

Validator

AnArbitrum Full Node that tracks the status of the chains'Assertion s. A validator may be aWatchtower Validator , aDefensive Validator , or anActive Validator .

WASM

Widely supported binary code format for executable programs. Used byArbitrum Nitro forFraud proof s , and more broadly used byStylus to support performant smart contracts in a wide variety of languages.

WASMer

A popular WebAssembly runtime for executingWASM binaries.A fork of WASMer is used for executingStylus programs. WASMer executes considerably faster than Geth executes EVM code, contributing to Stylus's lower fees.

Watchtower Validator

AValidator that never stakes / never takes on chain action, who raises the alarm (by whatever off-chain means it chooses) if it witnesses an invalid assertion.

WETH Gateway

Token Gateway for handing the bridging of wrapped Ether (WETH). WETH is unwrapped on L1 and rewrapped on L1 upon depositing (and vice-versa upon withdrawing), ensuring WETH on L2 always remains collateralized.

Zeeverse

As you're exploring the Arbitrum world, you may bump into a world filled with monsters and Zee's.

Explore a mythical Spirit Realm as a young Shaman and take part in strategic turn-based battles to help protect Zeeverse from the looming corrupted forces. Edit this page Last updatedonMar 7, 2024 Previous Arbitrum FAQ Next Contribute docs