The Inter Protocol Whitepaper

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1.0 Introduction

The Inter Protocol token "IST" is a fully collateralized, cryptocurrency-backed decentralized stable token for the interchain ecosystem on the Agoric chain. IST is designed to maintain parity with the US dollar (USD) for broad accessibility and provide Agoric and the interchain ecosystem users an asset with minimum price volatility. In addition, IST is the native fee token for the Agoric platform and provides some of the core functionality and stability for the Agoric cryptoeconomy.

Agoric connects to the USD$75 billion-plus interchain ecosystem[1] through the Inter-Blockchain Communication (IBC) protocol. The interchain ecosystem does not have a stable token backed by the broad spectrum of available assets such as ATOM, OSMO, and SCRT. IST is perfectly placed to play this role, allowing users to mint IST against their interchain assets. IST is available to all connected chains in the growing IBC ecosystem. Subject to approval by Inter Protocol governance, assets on other IBC connected chains can be used as collateral, enabling those tokenholders to easily participate in cross-chain DeFi. IST both fuels and benefits from the growth of the interchain ecosystem.

The Agoric blockchain provides the ideal platform for building applications to support a healthy stable token in the interchain ecosystem. The IST protocol takes advantage of the enhanced security of the Agoric chain, including smart contracts written in Hardened JavaScript, and offer safety provided by the Zoe contract framework[2]. In addition, the Agoric chain relies on BLD stakers for overall chain security. Fees in the Inter Protocol are denominated and paid in IST. These fees are distributed to stakers of the Agoric staking token BLD and a reserve that provides additional stability to the Inter Protocol.

BLD holders acting as a decentralized autonomous organization ('the BLDer DAO') have sovereign governance over the Inter Protocol. The BLDer DAO elects a technical economic committee to manage the Inter Protocol and propose changes (for example, which cryptocurrencies should be used as collateral to support IST minting).

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[1] https://cosmos.network/ecosystem/tokens/
[2] See Agoric white paper

2.0 The Inter Protocol

The Inter Protocol provides IST with its stable properties. Any user is able to permissionlessly deposit crypto collateral into their own vault in order to mint IST. Users mint against their own collateral in their vault to secure their IST.

The stability fee for minting is calculated on a daily basis. An additional upfront minting fee is charged when users mint IST. Fees are added to the debt to be paid by the user when they pay back the IST and withdraw their collateral. The fee revenue is shared between the Reserve Pool that supports the stability of the Inter Protocol and a Reward Pool that supports chain security by rewarding BLD stakers.

The amount of IST that can be minted by a user is determined by the value of the collateral (the "collateralization ratio") ,as determined on a per-collateral basis by decentralized governance. If the dollar value of the collateral falls below the collateralization ratio according to an external oracle, the IST protocol liquidates the collateral to pay off the IST debt, as well as imposing a liquidation penalty.

IST achieves its stability with three different market based arbitrage mechanisms that work together to maintain parity with the USD. These three concurrent mechanisms use different assets, work at different speeds, and track from a wide to a narrow band of parity to maximize the opportunities for arbitrage to bring IST back to parity in the case of a divergence from USD.

Arbitrage mechanism	**Collateral type**	**Arbitrage speed**	**Parity with USD**
Parity stability mechanism	High quality stablecoins	Fast	Narrow spread
Vaults	Whitelisted asset (approved by the BLDer DAO)	Medium	Medium spread
ISTstake	Staked BLD	Slow	Wide spread

In addition to these arbitrage mechanisms, a Reserve Pool owned fully by the Inter Protocol provides an emergency backstop in extreme circumstances.

2.1 Vaults

Vaults are smart contracts where users lock up crypto assets as collateral and mint IST. Each user deploys their own individual vaults per collateral type. Users are charged a minting fee and an interest rate that is settled upon exit when the vault is closed**.** Users repay IST plus fees and interest to retrieve their assets.

Due to the volatile nature of the price of crypto assets, most collateral types require overcollaterization. The collateralization ratio is set separately for each collateral type

Vaults are subject to liquidation by the IST protocol if the USD value of the collateral falls below the collateralization ratio. Users are responsible for monitoring the state of their collateral. In case of liquidation, the IST protocol sells the collateral in order to cover the outstanding debt plus a liquidation penalty. Any remaining balance from liquidation is returned to the user.

Governance determines the approved collateral types: the crypto assets that can be used as collateral in vaults. In addition, it sets and manages the parameters associated with each collateral type based on the risk of the asset. These include the total debt limit, the collateralization ratio, the stability fee, and the liquidation penalty.

2.1.1 Vault liquidation

Liquidation of user-controlled vaults occurs when the dollar price of the crypto asset falls below the collateralization ratio. The IST protocol uses a decentralized oracle price to determine the USD price of the collateral.

Liquidation primarily occurs by selling the collateral on 'Kinetic', a new native Agoric automated market maker. The Inter Protocol will maintain pools on Kinetic that consist of each approved collateral type and IST, funded by the Reserve Pool which holds the Inter Protocol's protocol controlled value.

Liquidations are subject to a rate-limiting procedure in order to minimize sudden value loss and price impact during major liquidation events.

2.2 ISTstake

ISTstake is an alternative method for minting IST available to stakers of the BLD token. Holders of the BLD token that stake their BLD with an active validator can lock up a portion of their staked BLD and mint IST against it. That debt is repaid by that users' future IST staking rewards. BLD that is locked up remains staked and continues to earn staking rewards, however users cannot unstake their BLD, nor withdraw their staking rewards until they pay back the minted IST plus fees. In this way, unlike minting IST through a vault, locked up BLD is not subject to liquidation.

Governance through the BLDer DAO determines the parameters for ISTstake. These include the total debt limit, the minting limit per account, and minting fees and interest rates.

2.3.1 Vault liquidation protection

For holders of staked BLD, ISTstake can also provide a liquidation protection for vaults. In order to access liquidation protection, users can link their ISTstake to their vaults. If their vault goes below its liquidation threshold, the Inter Protocol then mints IST against the holder's staked BLD to pay down their debt and avoid liquidation. The debt limits and other parameters for the ISTstake liquidation protection are set by governance.

2.3 Parity stability module

The parity stability module is provided for high-quality stablecoins such as USDC. Users can provide the high-quality stablecoin and receive newly-minted IST, rather than minting IST through a vault. This high frequency smart contract provides low cost and timely arbitrage opportunities whenever IST trades away from parity with the USD.

2.4 Reserve Pool

The Reserve pool consists of a pool of cryptocurrency assets held by the Inter Protocol as 'protocol controlled value'. The Reserve Pools play two critical roles. First, it is used to provide liquidity to Kinetic for liquidation. Second, it provides an emergency fund that can cover protocol debt in the event of a major liquidation. If after liquidating the collateral in vaults, there is still uncollateralized IST remaining in the market, the protocol uses the funds in the reserve pool to cover any shortfall.

The Reserve Pool holds a diversified portfolio of crypto assets, which may include BLD, IST (to support Kinetic pools when needed), and tokens representing shares in the Kinetic pools used for liquidation. In addition, execution fees for the Agoric chain, which are paid in IST, flow into the reserve pool, as do the liquidation penalty paid by vault-users in the case of a liquidation.

2.5 Multiple levels of protection

The IST protocol implements five levels of economic protection to ensure that IST remains 100 percent backed in the case of a large drop in the price of collateral:

1. Overcollateralization
2. Liquidation
3. Reserve pool
4. IST fees
5. BLD issuance

The first line of defense is the vault overcollateralization. If vaults drop below the liquidation threshold, the Inter Protocol will liquidate the vault collateral on Kinetic. The Reserve Pool is used to cover any remaining shortfall. If a shortfall still remains, additional fees flowing into the Reserve Pool are used as an additional backstop. In extreme circumstances, the BLDer DAO can vote to issue new BLD to support outstanding IST.

3.0 Governance

The IST protocol is governed by BLD holders acting as the BLDer DAO. The BLDer DAO elects an economic committee who are delegated to monitor day-to-day economic parameters such as collateralization ratios, debt limits. The economic committee can recommend changes to the Inter Protocol for approval by the BLDer DAO, such as the introduction of additional collateral types, rules of IST issuance, and adjustments to the liquidation process. The economic committee is subject to periodic re-election by the BLDer DAO.

4.0 Glossary

The Inter Protocol consists of several components implemented as smart contracts on the Agoric chain:

Automated Market Maker (AMM): A decentralized finance primitive that allows for swaps between two or more assets.

BLD: BLD is the native staking token to the Agoric chain and represents sovereign governance over the Agoric chain and the Inter Protocol.

The BLDer DAO: A decentralized autonomous organization (DAO) that comprises BLD holders. Staking BLD allows a BLD holder to vote in the DAO's decision-making processes.

Economic committee: An economic committee delegated by BLD holders to manage technical economic parameters and make recommendations to the BLDer DAO.

Kinetic: Agoric's native automated market maker supports the Inter Protocol by providing a market to liquidate user vaults. Beyond its role in the Inter Protocol, the native AMM will also support trading of assets launched on Agoric or brought to the Agoric chain via IBC.

Oracles: The IST protocol relies on a decentralized oracle network to provide the current dollar price of the collateral.

Parity Stability Module (PSM): A mechanism where IST is traded for a high-quality stablecoin (such as USDC). This high frequency market provides low cost and timely arbitrage opportunities if and when IST breaks parity with the US dollar.

Reserve Pool: The reserve holds additional crypto assets in the form of protocol controlled value for two purposes. First, the reserve pool protects the Inter Protocol from large declines in collateral value by covering shortfalls in vault liquidation. Second, the Reserve Pool ensures a base level of liquidity is available for vault liquidations on Kinetic.

Reward Pool: Fees generated by the operation of the Inter Protocol flow to BLD stakers to reward them for providing chain security.

IST: IST is the stable token minted by the Inter Protocol. IST maintains parity 1 to 1 to the USD. IST is available over the Inter-Blockchain Communication (IBC) protocol.

ISTstake: A mechanism that allows BLD stakers to lock their already-staked BLD to mint IST. The BLD remains staked and continues to earn staking rewards. Minted IST (plus minting fee and interest) must be repaid before they may unstake their BLD. This enables BLD stakers to participate in the ecosystem while still securing the chain.

Vaults: Holders of approved crypto assets can lock their assets in user-controlled vaults to create IST. The set of approved assets is determined by protocol governance.

5.0 Community

Inter Protocol is a collaborative effort to create a stable token for the entire interchain ecosystem. This document presents a concrete suite of mechanisms that work together to accomplish this vision. The Inter Protocol will be realized by the ongoing efforts of many contributors across many chains and ecosystems. Please see [URL] for all the projects and contributors that support the Inter Protocol.

6.0 Disclaimer

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