# Comdex
## Democratizing Finance

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### ABSTRACT.

Comdex was originally presented as a synthetic assets creation and exchange protocol. In building out various on-chain synthetic assets, the utility of these assets in thriving DeFi ecosystems plays a crucial role in bringing them value on chain. Comdex has therefore enhanced its protocol vision to combine the tenets of synthetic asset creation and core DeFi primitives. The protocol is built to serve as a DeFi infrastructure layer for the multichain. With modules built on core DeFi primitives and principles, the Comdex chain facilitates the seamless building of DeFi for Cosmos.

# 1. Introduction

The advent of DeFi has brought a whole range of tools that enable democratized participation in financial markets. DeFi has therefore played a fundamental role in the evolution of cryptocurrencies and decentralized economies. Financial markets run on the fundamental ability to generate liquidity or debt against collateral assets of value. The other emerging marketplaces for these assets help holders earn yield through various avenues with their assets, provided they have the permissions and knowledge. DeFi enables free market participation through trustless custody of capital.

Traditional finance often deals with physical collateral assets of value, which create mobility and liquidity constraints in the movement of such assets. Representation of these assets as documents or securities makes them tradeable and liquid. This mechanism gives investors access to a broader set of asset types. The growing adoption of cryptocurrencies will bring with it an ever growing asset class. Through the creation of DeFi, on-chain assets can serve as collateral to generate liquidity and debt. Which can then act as a source of yield from participation in various financial marketplaces.

Being able to collateralize an asset inherently implies the ability to liquidate the asset in a liquidation event to maintain the solvency of debt generated. Facilitating liquidations, therefore, requires information on the value of an asset, the ability to hold the asset, and a liquid market to sell the asset. Each liquidation market is likely to operate with its exchange mechanism based on the type of asset liquidated. The liquidity conditions of these asset markets play a crucial role in determining the valuation of these assets. These transactions form infrastructure rails for democratized access to finance and crypto money markets.

# 2. The Comdex Chain

Comdex is a DeFi infrastructure layer for the Cosmos ecosystem. Comdex is a layer-1 infrastructure for seamless deployment of DeFi applications in the Cosmos ecosystem, powering DeFi in the multi-chain future.

Comdex launched with a vision to democratize and revolutionize the commodities trade industry, one of the oldest and largest industries in the global economy. The Comdex chain is built to enable the bridging of capital to assets across the DeFi and CeFi ecosystems. A genuinely decentralized ecosystem of solutions enables limitless access to global liquidity in finance.

Comdex aims to deliver a robust infrastructure layer that supports the seamless creation and deployment of DeFi applications in the Cosmos ecosystem. The Comdex chain enhances investors' access to a broad range of assets that help investors diversify and generate yield on their investments.

The chain consists of modules designed to facilitate critical aspects of contractual financial transactions in DeFi structures. Tokenized assets of value can then be collateralized for debt or exchanged. Such transactions form a critical piece of unlocking liquidity for on-chain assets. The chain can also facilitate the creation of synthetic liquidity and debt. The on-chain modules are as follows:

- Asset- defines assets based on their characteristics (Eg. IBC assets, on-chain, off-chain assets etc). Apps on the chain are initialised through this module.
- Vault - Module that stores collateral assets in vaults and monitor the corresponding debt
- Liquidation- triggers liquidation of collateral assets in undercollateralized vaults
- Oracle- receives oracle data in packets
- Market-  stores oracle data based on asset IDs
- Auction- facilitates on-chain sale of assets on the protocol via customizable auctions.
- Liquidity- facilitates creation of liquidity pools for DEXes
- Lend- facilitates creation of lending pools of assets for borrowing at interest.
- Locker- facilitates creation of on-chain pools of assets
- Collector- stores fees and triggers corresponding commands and responses
- ESM-  emergency shutdown protocols
- Rewards- creation of reward pools for module interactions
- Tokenmint - creation of CW20 tokens on chain

# 3. Modules

Each module of the Comdex chain enables builders of DeFi applications to deploy products by utilizing modules with customizable parameters.

Any base set of applications will each utilize these modules to facilitate their functions towards creating an interoperable DeFi market player for assets.

Utilizing modules such as **Asset** and **Vault** to tokenize an asset on the chain and then collateralize them can help generate liquidity or debt through minting synthetic assets (such as stablecoins).

If volatile, the collateral asset may attract the risk of liquidations. In which case, the **Liquidation** module monitors and triggers liquidation events across vaults.

In order to monitor the external value of collateral assets, the **Oracle** and **Market** modules are utilized to obtain price feeds from external sources and consolidate data.

Liquidations can trigger auctions by utilizing the **Auction** module, where parameters of the auctions can be customized based on the use case.

The **Liquidity** and **Lend** modules enable users to deploy assets in AMM-based liquidity pools or lending pools to provide yield on assets.

The **Collector** module collects fees based on predefined parameters. Fees can be earned based on the type of services provided by the application. The **Locker** module enables protocols to bootstrap protocol revenue to provide a yield to depositors.

The **ESM (Emergency Shutdown Module)** triggers protocol-wide shutdowns based on predefined protocol parameters built to safeguard DeFi protocols against extreme externalities.

The **Tokenmint** module creates on-chain CW20 tokens, which serve utilities such as accruing value from adoption, governance, and incentivization value. The **Reward** module distributes token-based rewards to bootstrap adoption via interaction with individual modules from deposit pools of reward tokens. The module distributes any IBC assets to incentivize specific module interactions based on predefined parameters.

# 4. Future Modules

Comdex aims to deliver solutions to create DeFi ecosystems that bridge with CeFi assets. As Comdex progresses, there is potential for building more customizable and generalized modules to facilitate the requirements of CeFi counterparts. Tokenizing real-world assets on the chain facilitates interaction with CeFi-based assets. These assets interact with ecosystems of DeFi users to bring off-chain yield onto the chain. However, real-world assets are often physical assets like precious metals and commodities in most cases. For such assets, facilitating exchange without the limitations in the mobility of such assets becomes fundamental to the seamless flow of capital across assets. While on-chain tokens serve as representations of off-chain assets, the issuing entity must always be capable of managing custody of the physical assets. The custody of such assets often comes with costs and risks and is often facilitated by trusted intermediaries. The decisions of critical stakeholders govern the ability of these custodians to execute transactions or exchanges. Replicating such contractual transactions on chain would require the establishment of on-chain identities for users.

The **ID** module will establish the identities of users on chain. The identities of users created on chain, store characteristic data-points of the users, through customizable parameters.  As CeFi begins to increase its interactions with DeFi, there is likely to be a growing emphasis on regulatory disclosures in the products that emerge. For systems operating under centralized authorities, utilizing the **ID** module helps create transparency and immutability of on-chain interactions.

The **RFT (Refungible Token)** are on-chain assets with the inherent capability to have modifications to their states. Users are able to modify characteristics/parameters of these assets over time, without fundamentally creating a new on-chain asset. This module is especially applicable to systems dealing with assets of changing characteristics (through exogenous and endogenous means).  Systems may utilise the **ID** module along with the **RFT** module in systems where identities of users modifying the state of an RFT must be essential and stored immutably.

Unlike highly liquid digital assets, real-world physical assets have concentrated liquidity, making the adoption of AMM-based marketplaces a challenge. Liquidation and exchange of such real-world assets require order book-style execution environments, where markets of buyers and sellers discover prices through limit orders. Limit orders are orders to purchase assets at a specified price or better. Introducing the **Orderbook** module will allow market participants to place limit orders for purchasing or selling assets in marketplaces. This module will allow the exchange of assets at prices determined by market demand and supply forces along with real-world liquidity of such assets in traditional markets.

The combination of these future module releases working in tandem with existing modules will help form the base layer for onboarding institution adoption and bridges between CeFi and DeFi. Applications could enable communities to vote and elect whitelisted entities that have custody of physical assets to grant them permissions to tokenize these assets on-chain. These entities are trusted to manage the supply of on-chain tokens to represent the holding volume. Further chain permissions are set to enable various users access rights to modify

asset characteristics and parameters. On-chain identities of users interacting with CeFi assets can be shared with permissioned KYC entities to ensure regulatory compliance.

Unlocking the ability to let DeFi capital interact with CeFi assets will have a huge impact on realising Comdex's mission to democratise finance.