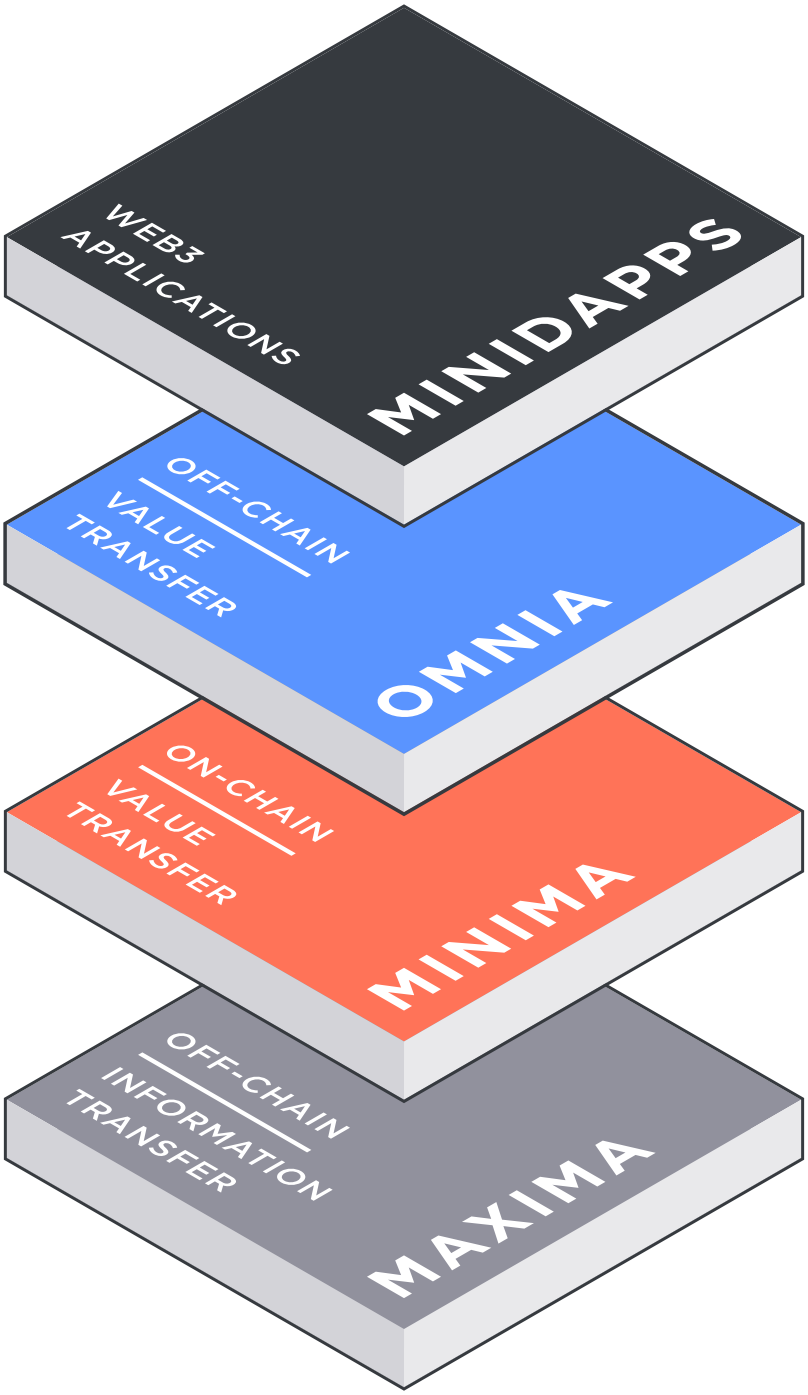
# Minima
# Protocol Layers Paper

The evolution will not be centralized

# Minima Protocol Layers

The Minima network consists of four distinct layers. Each layer contributes to Minima being a truly decentralized, censorship resistant, peer-to-peer network for value and information exchange.

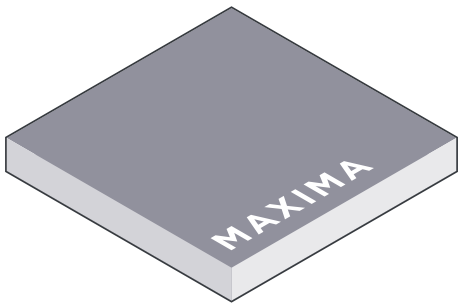


## Layer 0: Maxima

Information transfer

Off-chain

Maxima is the **information transport layer** running over the Minima network. Communication is point-to-point. Messages can be sent, off-chain, to chosen connected peers.

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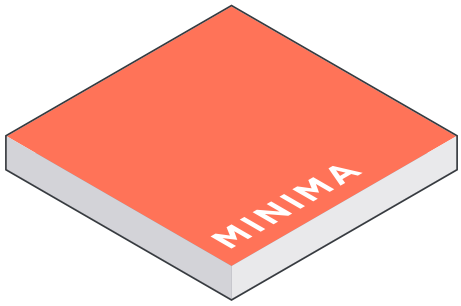
## Layer 1: Minima

Value transfer

On-chain

Minima is the blockchain layer for **value transfer**. All transactions are processed by all nodes on the network. It is flood-fill. It uses a P2P system as its backbone for communication between nodes.

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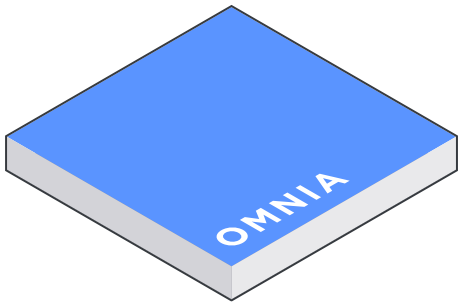
## Layer 2: Omnia

Value transfer

Off-chain

Omnia is **fast, affordable** and **scalable**. It enables instant peer-to-peer transactions by creating bi-directional payment channels between participants, using technology similar to Bitcoin's Lightning Network.

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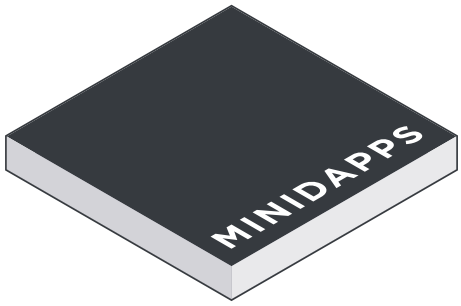
## Layer 3: MiniDapps

Web3 applications

MiniDapps are **truly decentralized applications** built using the functionality enabled by the Minima network:

1. Information transfer on **Maxima**
2. Value transfer on **Minima**
3. Unlimited transactions per second on **Omnia**

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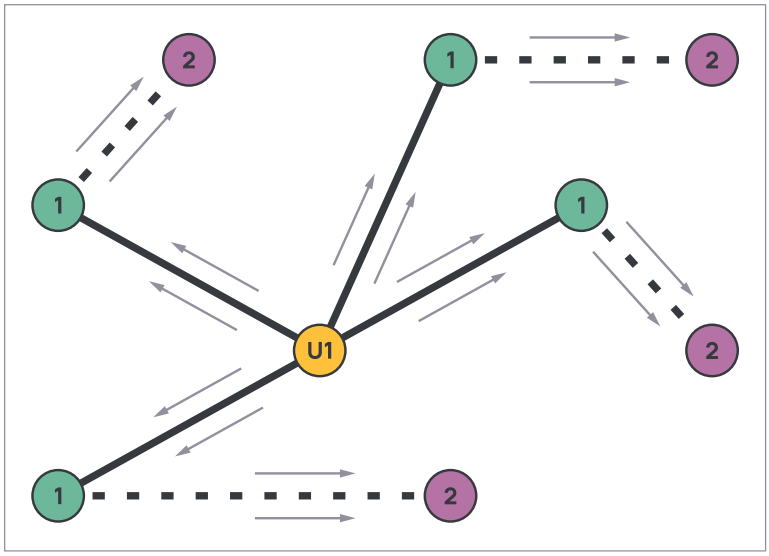
# How it works

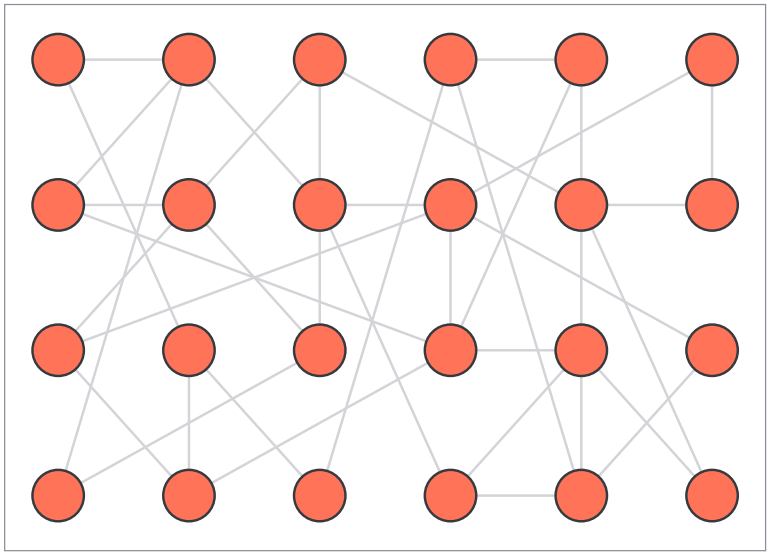
## Layer 0: Maxima




Maxima is an **information transport layer,** enabling **encrypted**, peer-to-peer exchange of information between 1st and 2nd degree connections on the Minima network.

Maxima can be used to build censorship resistant messaging applications over the Minima network and will be used for sending messages for Layer 2 communication on Omnia.

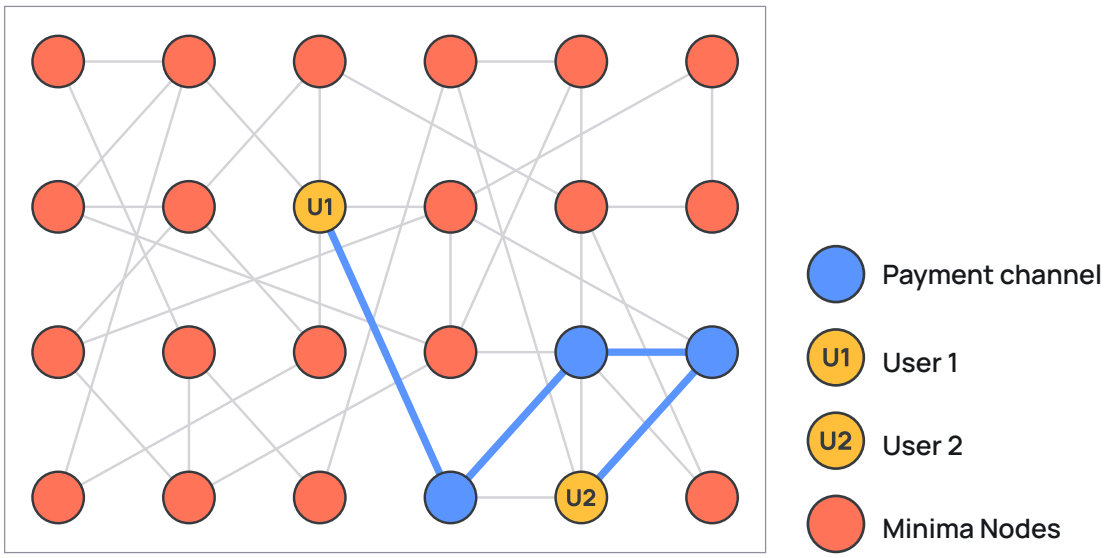
## Layer 1: Minima




The Minima blockchain is where **all on-chain transactions are processed**. Every node in the network collectively comes to consensus on the state of the blockchain so all transactions are accounted for.

Users initiate their transacting relationships on Layer 1, prior to moving off-chain to use Layer 2 for faster and cheaper transactions. As the trust layer of the protocol, Layer 1 is also used for settling any disputes between users on Layer 2.

## Layer 2: Omnia




Once users have set up their transacting relationship on Minima, they can perform **all transactions off-chain**, on Omnia. This is where the bulk of peer-to-peer exchange between users of the network takes place. It is **affordable and fast**, as each payment is not settled on the blockchain and transactions are only processed by the relevant users rather than the entire network, as occurs on Layer 1.

Based on **ELTOO** technology, Omnia can do more than simple payments. **It can do any/all smart contract sequences** with a given subset of users and subset of coins. Using hash time locked contracts (HTLCs) and payment channels, users can keep a 'tab' of their unsettled balances indefinitely, until they wish to settle on Minima (Layer 1).

**This unlocks the possibility of essentially unlimited transactions per second (TPS).**

## Layer 3: MiniDapps (Web3 applications)

| | | |
|---|---|---|
| Gaming | Social messaging | Identity |
| Exchange | Defi | Wallet |

**MiniDapps are decentralized applications** combining the utility provided by Maxima, Minima, and Omnia with Minima's scripting language.

The front-end for MiniDapps can be written using the widely known JavaScript, HTML and CSS. Minima's KISS scripting language is Turing-Complete, allowing for powerful smart contract driven applications. **Building a MiniDapp is accessible to any web developer.**