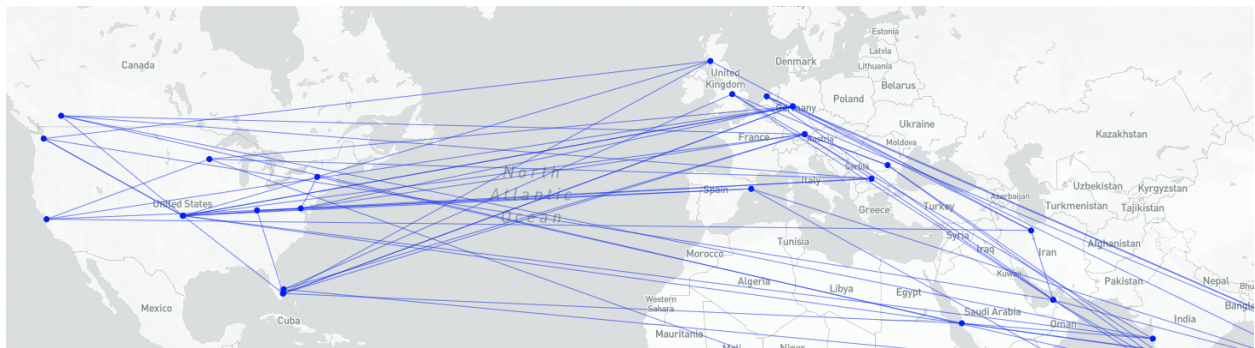


The Streamr Network Lightpaper

The Streamr Network enables real-time distribution of any live data source to any number of subscribers.

The Network

The Network appears to the user as a publish/subscribe messaging service, however, under the hood nothing is quite the same when compared with conventional cloud operators.



The real-time data stream of Light nodes visiting the streamr.network website

The key difference is that the Network is decentralized and operates entirely peer-to-peer. Similar to cloud services, you get on-demand scalability, minimal up-front investment, and benefit from economies of scale. Unlike cloud services, there's no vendor lock-in, no monopolies, no proprietary code, and no need to trust a third party with your data.

Instead of a centralized party, the Network is run by its community of users, and it relies on cryptography to remove the need for trust. This creates a permissionless and neutral network for real-time data, extending the capabilities of the underlying internet without compromising its open and decentralized nature. For more information, see the [Network White Paper](#).

Network properties

- Censorship resistant publish/subscribe messaging at scale
- Sub-second ordered message delivery
- Cryptographically signed and end-to-end encrypted messages
- Composable smart contract access control
- Runs anywhere JavaScript runs, including the browser
- Free to use, peer-to-peer architecture
- Pseudonymous messaging

Network utility

1. Data transport & generalized messaging

IoT messaging Crypto communications Dynamic NFTs Web3 gaming Live media
Networking middleware DevOps Private data sharing

Using the Network as a means to publish and subscribe to data in real-time. The Network can be used for generalized messaging between humans, machines and any IoT objects.

Case study The Network is used to power the *The Chat App* – an Ethereum based, decentralized group wallet chat. Chat rooms are streams on the Network and every message is cryptographically signed by chat participants providing verified proof that the parties chatting are really who they say they are. See, [The Chat App](#).

2. Data sharing

Open data Data benchmarking

The Streamr Network is uniquely positioned to deliver on the promise of the open data mission – if you make information accessible, someone will make good use of it, and people will benefit. Data producers, such as governments and smart cities, may share their data without any infrastructure investment – in most cases, a simple fire and forget script will do.

Case study The Finnish public transport authority (HSL) publishes real-time telemetrics from public transport vehicles in Helsinki to the Streamr Network. Any number of subscribers can join and ingest the real-time streaming data. See, [Helsinki Trams GPS](#).

3. Data monetization

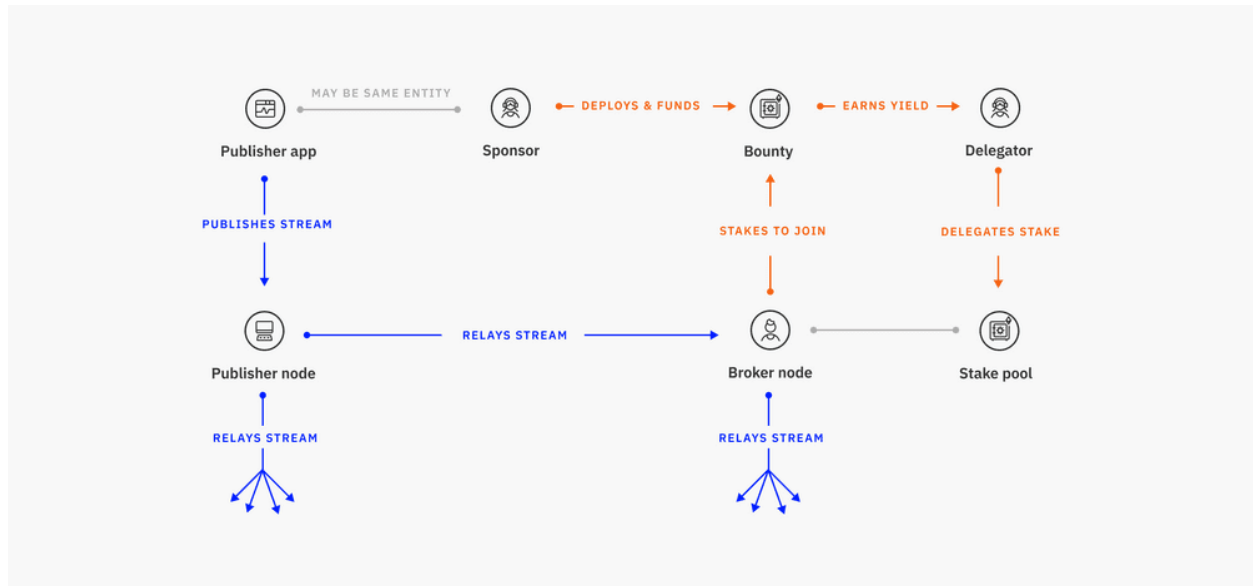
Data DAOs Data marketplaces

The Network can natively host Data DAOs (Data Unions) that allow anyone in the world to contribute their data into a shared streaming data asset that can be monetized for fair reward. These data streams can be trustlessly monetized using marketplace smart contracts.

Case study The [Data Unions framework](#), built on Streamr, allows Swash users to stream their valuable browser data to data consumers in a fair trade for cryptocurrencies. See, [Swash app](#).

Token utility

The main utility of the DATA token is to fund bounty reward contracts in return for data transport quality of service guarantees on the Streamr Network.



Wanting better service for the stream, a sponsor deploys and funds a Bounty in DATA

On Ethereum you bid a higher gas price to incentivise miners to execute your transaction faster. A similar economy is at play on the Network: you can pay less (or even nothing) if you're happy with best-effort performance, or you can pay to incentivise nodes to make your stream more robust and secure.

Network bounty contracts incentivise Broker nodes to join stream topologies. The promise of the joining Broker is: *"I am an honest and stable node, and I'll join the stream topologies to help stabilize and secure them."* In return, the promise-keeping Broker gets paid for their service from the bounty contract. For more information see, [DATA tokenomics](#).

The DATA token is also the governance token of the Network and is utilized in the Streamr ecosystem as the default currency for accessing paid data streams.