NKN

NKN: New Kind of Network

building the world's largest blockchain for network sharing

September 2019 Edition

WHY

Challenges of today's network & blockchain

The Missing Element

PROOF OF STORAGE

e.g. IPFS/Filecoin, Storj

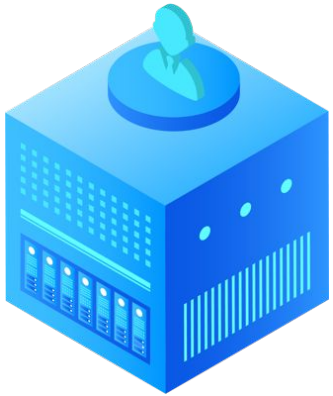
PROOF OF WORK

e.g. Bitcoin, Ethereum

PROOF OF RELAY/TRANSMIT

Missing -> NKN

Challenges of today's network



Client-Server model is expensive, complex, and prone to failure & attack

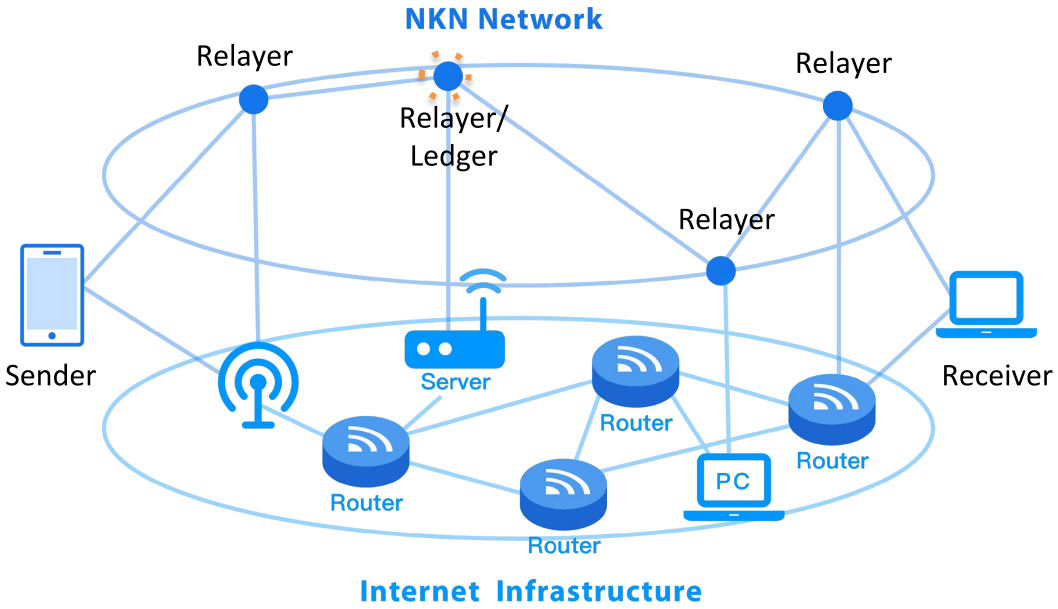
Inefficient Network utilization results in bad or no connection

Centralization of blockchain systems diminish trust

WHAT

Revolutionize blockchain and decentralized networking

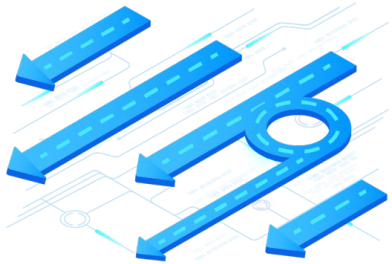
What is NKN



- NKN is the new kind of P2P network connectivity protocol & ecosystem powered by a novel public blockchain.
- We use economic incentives to motivate Internet users to share network connection and utilize unused bandwidth.
- NKN's open, efficient, and robust networking infrastructure enables application developers to build the decentralized Internet so everyone can enjoy secure, low cost, and universally accessible connectivity.

The NKN Advantages

Millions of nodes



High aggregated throughput

Zero Server

Unique & global ID

Extra security & privacy

Low latency

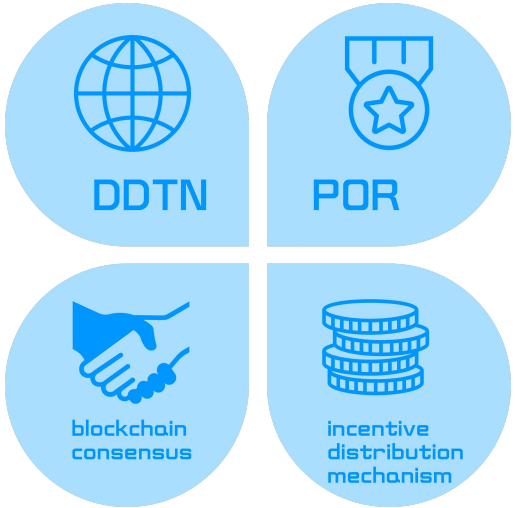
HOW

Core technology

NKN core technology innovations

Dynamic topology & routing based on Chord DHT, overlay on top of TCP/IP

MOCA consensus algorithm for Millions of equal nodes



Signature Chain for secure and verifiable data transmission; useful proof of work

Relay and mining reward to incentivize sharing and building the new Internet

ACHIEVEMENTS

Major milestones accomplished since 2018

NKN testnet to Mainnet: met/exceeded every milestones

TESTNET

June 16th, 2018

V0.1 "Firefox" release

First live testnet over global nodes with all core subsystems working together

August, 2018

V0.3 "Lemur" release

Optimizing scalability and efficiency, SDK alpha release

October, 2018

V0.5 “Koala” release

Enhancing attack resistance, larger scale testnet, SDK Beta release

January, 2019

V0.7 “Meerkat” release

Full featured testnet with complete implementation and performance, SDK v1.0 release

MAINNET

March, 2019

V0.9 “Beluga” release

Further develop and improve NKN core system based on status of the TestNet

June, 2019

V1.0 “Narwhal” release

Launch MainNet & NKN ecosystem

NKN Achievements Timeline (2018 - now)

Business Development

NKN Project Start

Seed Funding Complete

TELECOM INFRA PROJECT

ONF

Datapace

IoTeX

DigitalOcean

Nokia Open Innovation finalist

w3i

1-Click Market for DO, GCP, and AWS

Ankr

taxa

2018 Q1 | Q2 | Q3 | Q4 | **2019** Q1 | Q2 | Q3 | Q4

White Paper Released

Dr. Diffie advisor

CRYPTIC LABS

Open Source

Public Testnet

Dr. Wolfram advisor

Space Cats 3D game

5,000 Nodes

10,000 Nodes

Mainnet Launch 20,000 Nodes

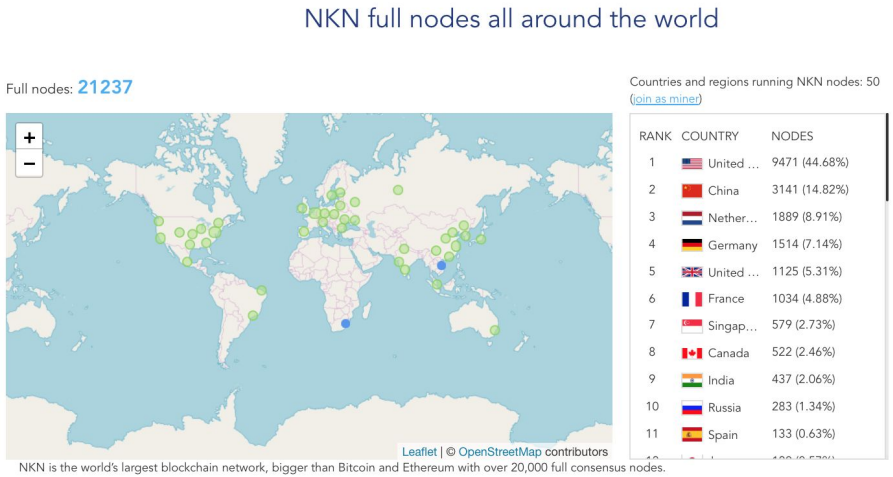
NKNx

D-Chat

Technology Development

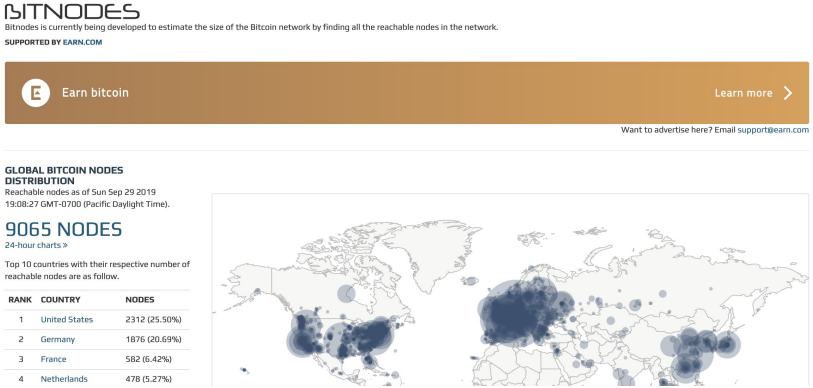
NKN is building the largest blockchain network, more than Bitcoin

It took NKN 12 months to reach **20,000+** nodes



September, 2019 snapshot
https://nkn.org

It took Bitcoin 10 years to reach **9,000+** nodes

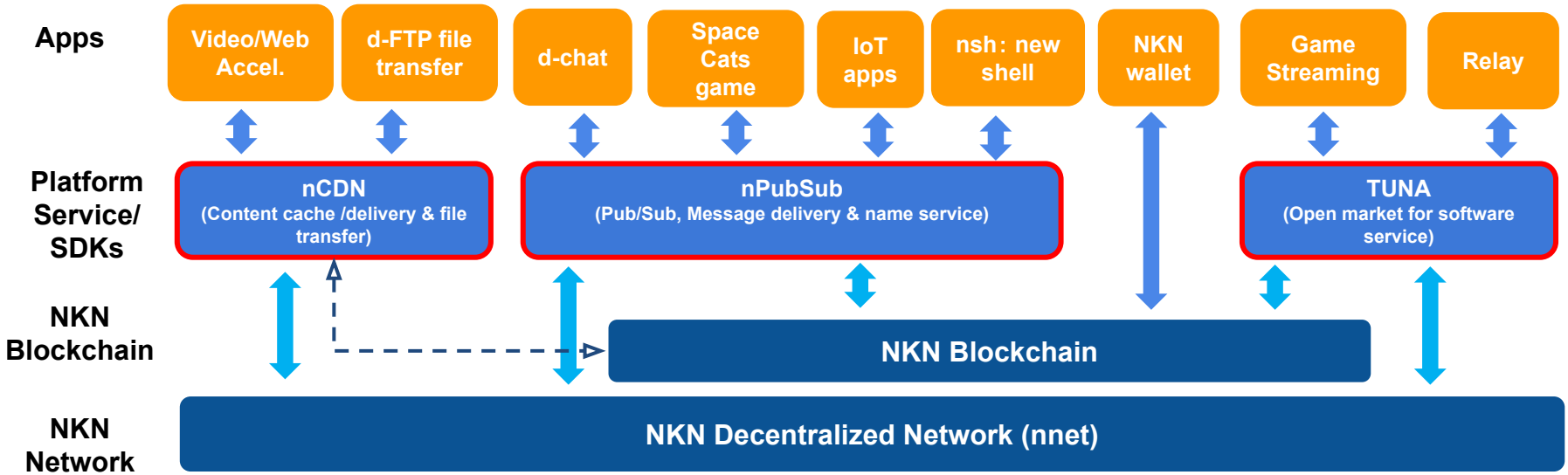


September, 2019 snapshot
https://bitnodes.earn.com/

PRODUCTS

NKN Use Cases & Applications

NKN products and apps overview



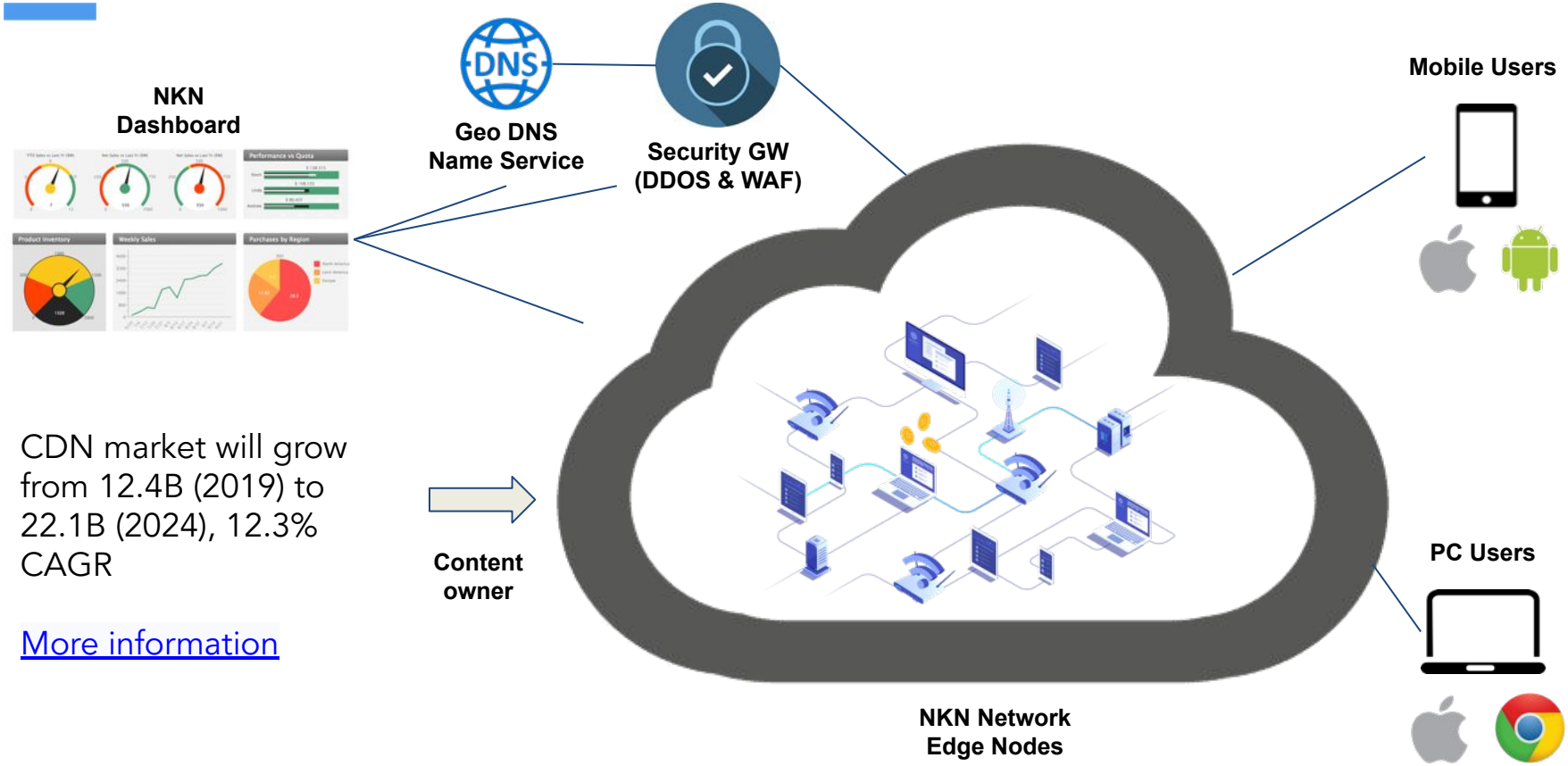
Platform (PaaS) products

nCDN: New Kind of CDN
More information

nPubSub:
Decentralized Pub/Sub Messaging
More information

TUNA: Open marketplace for software services.
More information

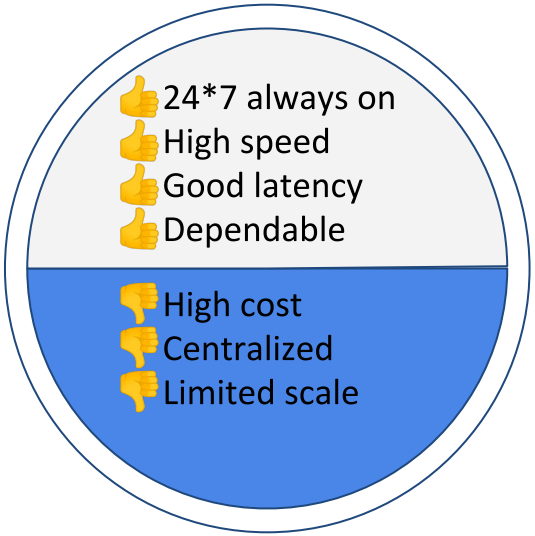
nCDN: New Kind of Content Delivery Network



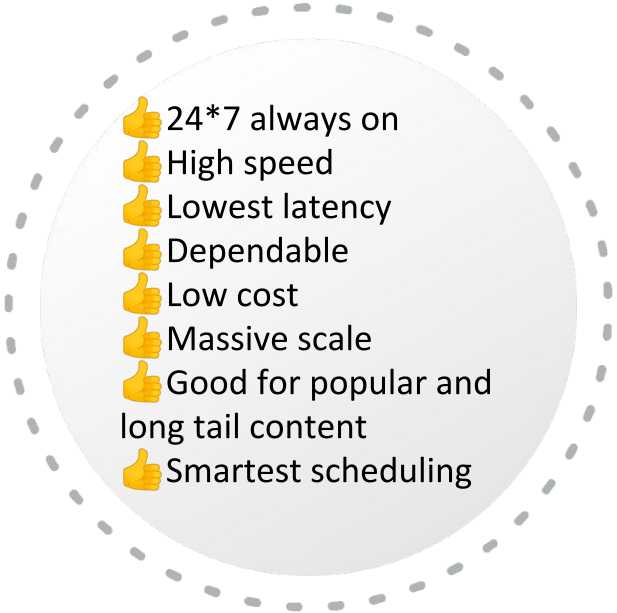
CDN market will grow from 12.4B (2019) to 22.1B (2024), 12.3% CAGR

[More information]

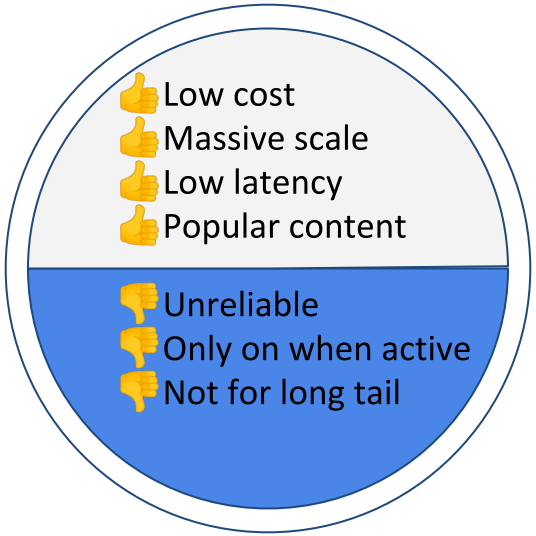
Against Competitions: fast & dependable service at low cost



Traditional CDN
Own Data Center
e.g. Akamai, CloudFlare

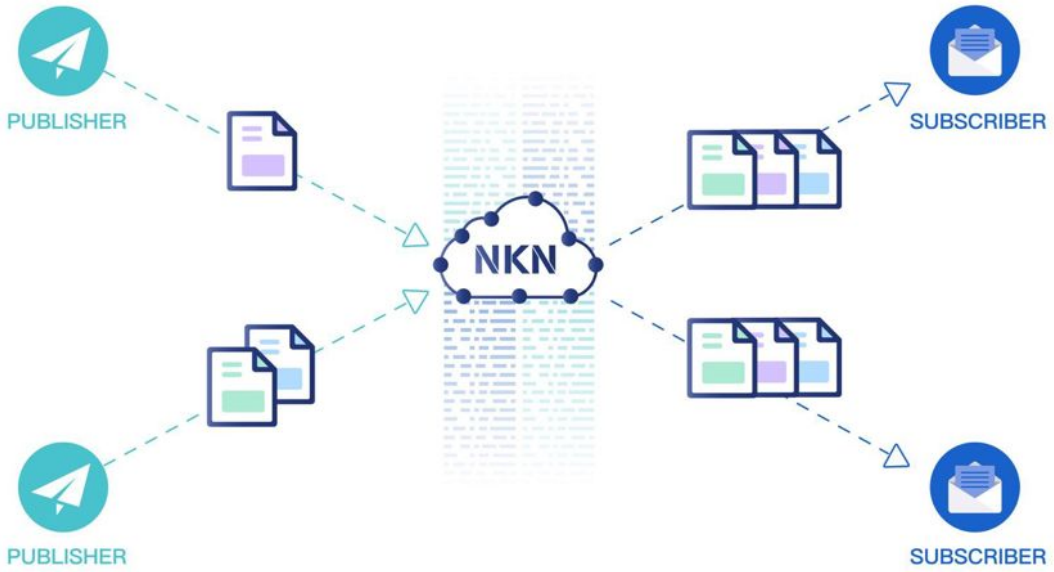


nCDN
Crowdsourced servers



P2P CDN
End User Devices
e.g. Peer5, Streamroot

nPubSub: decentralized Pub/Sub messaging



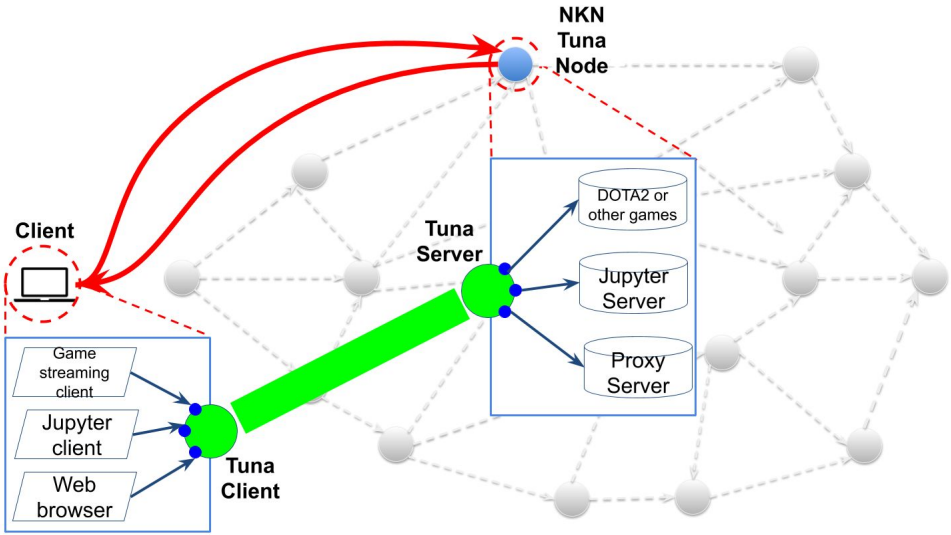
- Gartner: iPaaS is the fastest growing segment of the Application Infrastructure and Middleware (AIM) (Total AIM Market is $30B)

- Basic building block for most modern applications (chat, IoT, gaming, real-time price)

More information

- Note: pub/sub (short for publish / subscribe) is a model that decouples message sender (publisher) and receiver (subscribers)

TUNA: Open Market for Software Services



TUNA (Open Market for Software Services)

- Many use cases such as web relay and real-time game streaming (like Google Stadia)
- Use one TUNA tunnel for all these services and more without opening multiple tunnels.
- We everage the army of NKN nodes to make sure services are readily available all around the globe.
- See more at this brief TUNA introduction

Applications

D-Chat
Decentralized chat based on nPubSub.
More information
Gitlab

d-FTP: NKN file transfer
More information

nsh: NKN Shell
More information

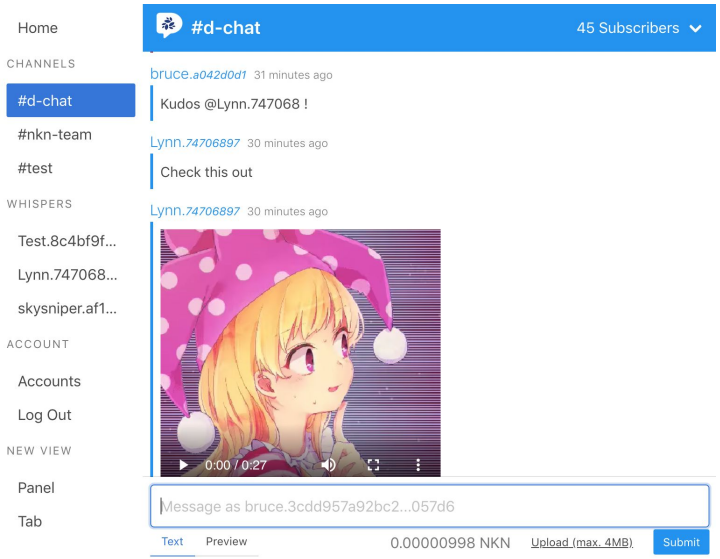
NKN Explorer
Blockchain explorer and node check.
More information

nknX Node and wallet tracker
Miner portal, Node and Wallet tracker.
More information

SpaceCats
3D multi-player action game without servers.
More information
GitHub

Smart Home IoT
Secure NKN-based e2e communication solution for massive IoT devices.
More information

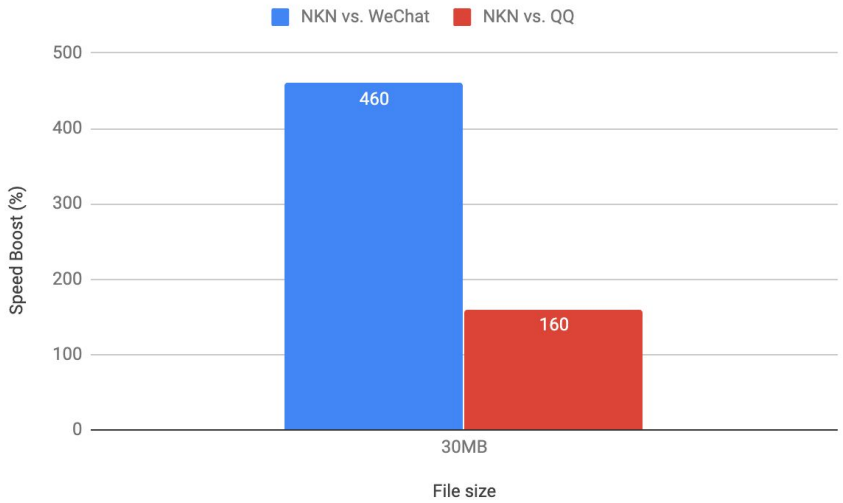
d-Chat: decentralized chat based on nPubSub



d-Chat

- The only truly secure person to person or group messaging service that does not go through any centralized servers.
- Security is enabled both at end to end level as well as hop by hop level.
- It is extremely scalable: messages are delivered off chain and leverage the entire army of NKN nodes.
- More information about d-chat as well as links to Chrome/Firefox plug-in.

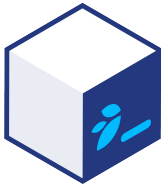
d-FTP: high throughput file transfer using NKN client

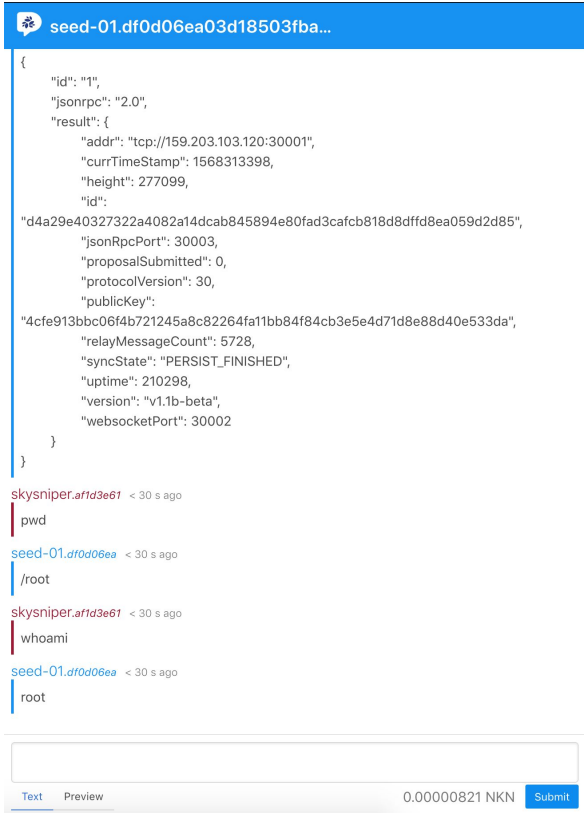


d-FTP (NKN File Transfer)

- Truly secure and direct user to user large file transfer without any centralized servers (e.g. google drive, gmail, dropbox, etc)
- Faster than popular consumer apps (e.g. WeChat, QQ).
- We use d-FTP to transfer files between Beijing and Silicon Valley and are constantly getting 5x ~ 10x speedup compared to scp.
- See more at our introduction article

NKN Shell (nsh): more secure and convenient terminal than SSH

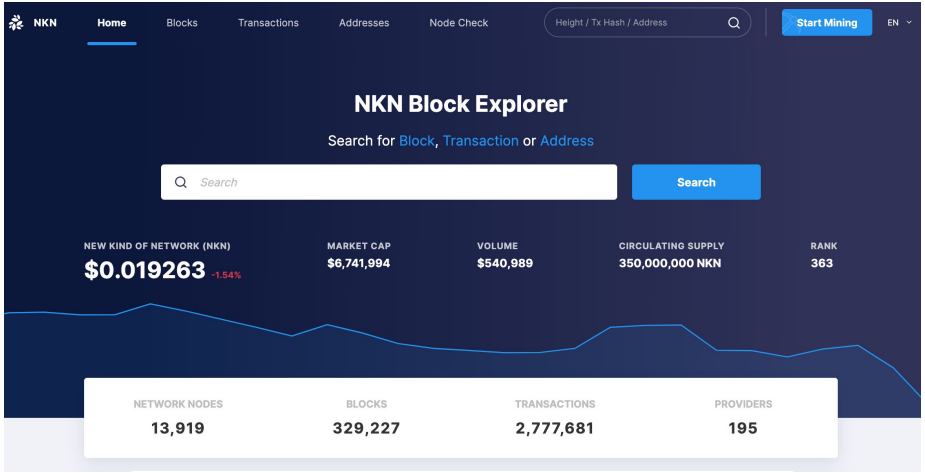


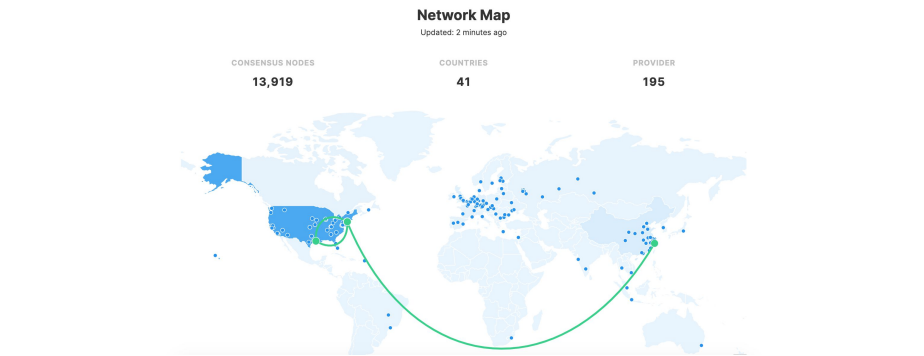


nsh (NKN Shell)

- More secure and convenient than SSH
- Do not require the remote server to have public IP address or open ports
- Can easily run one command without setting up the entire SSH session
- We use nsh to manage our own server nodes and for various NKN services including nCDN.
- More: [Hackernoon frontpage article]

NKN Blockchain Explorer

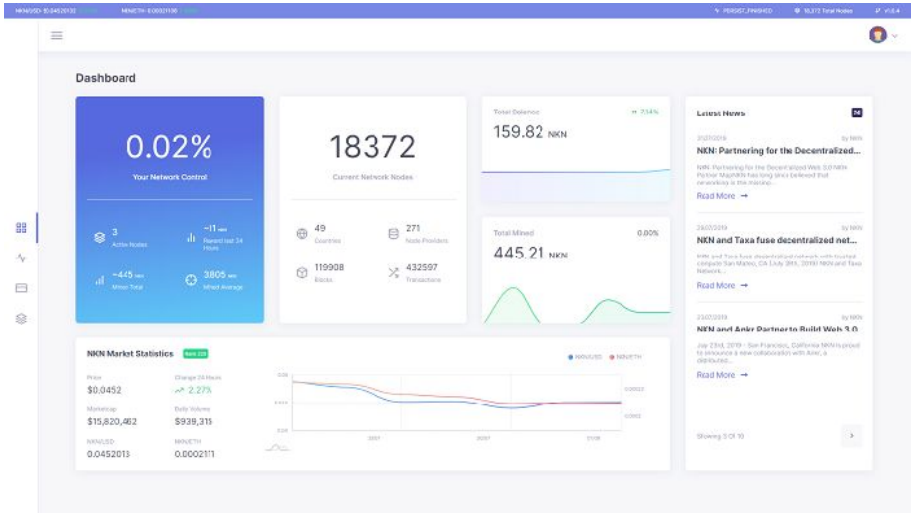




NKN Blockchain Explorer

- Full featured blockchain explorer: search by block, transaction and address
- Node map of all public NKN nodes globally
- Node checker using node's IP address
- Modern UI design, delightful user experience
- Support 13 international languages
- More information

nknX Node and Wallet Tracker: Miner Portal



nknX Node and Wallet Tracker: Miner Portal

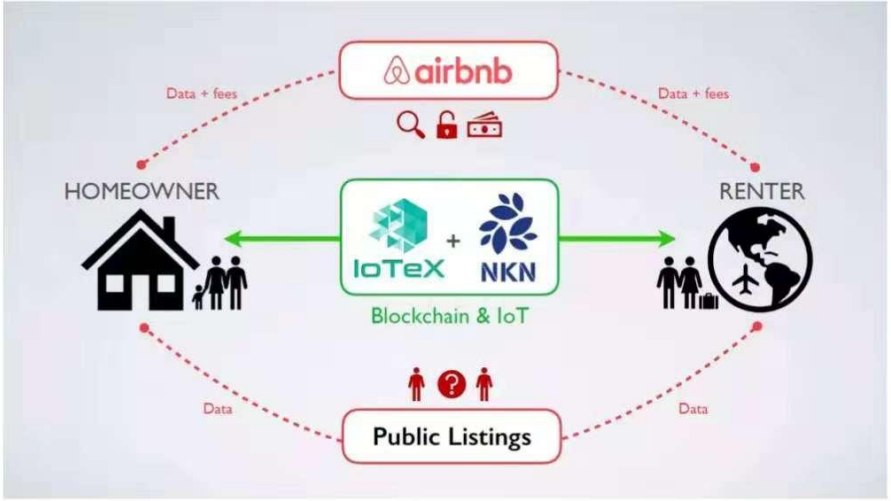
- NKNx is a node and wallet tracker for NKN blockchain network. It makes managing nodes and wallets easy and convenient.
- Monitor mining nodes' profitability and performance
- New NKNx Fast Deploy automatically create an installation script for your linux machine and installs a fully functional node.
- More information

SpaceCats 3D action game

SpaceCats 3D action game

- Built with Unity 3D engine and NKN real-time messaging services
- Decentralized and without any servers, even for multi-player game.
- millisecond level action control
- More information
- GitHub

Direct Connect Solution for IoT devices



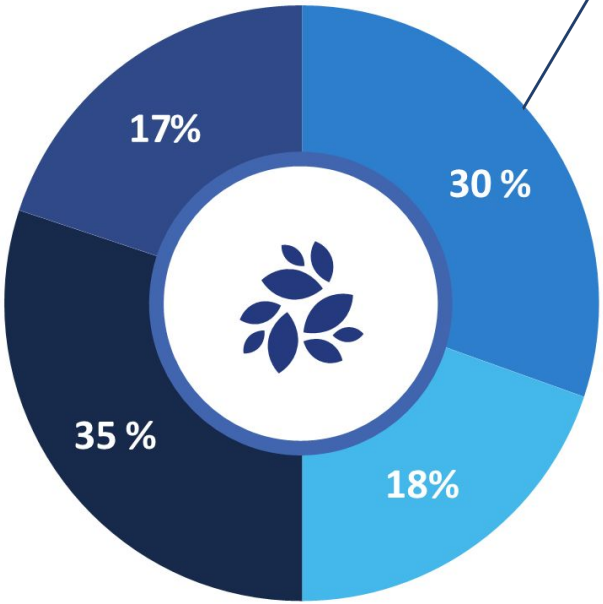
Direct Connect solution for IoT devices

- NKN can provide peer to peer, mesh, ad-hoc, and secure network communication for billions of IoT devices. The data transmission is authenticated, encrypted and verified, in order to support mission critical IoT applications.
- Example: NKN and IoTeX built a joint solution for smart home, using blockchain technology to connect and manage devices like smart thermostat, lights, and door locks.
- More information

ECOSYSTEM

Economic model, partnership, token metrics

Token metrics



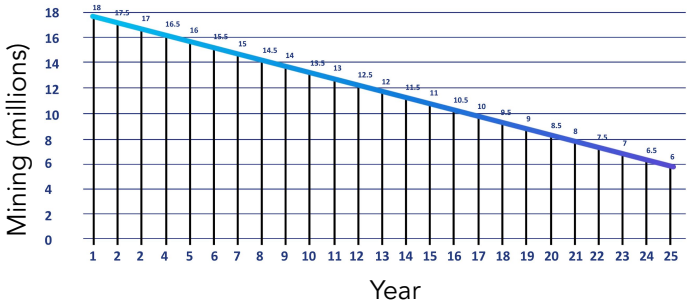
- NKN Foundation
- Developers
- Miners
- Purchasers

At genesis

- NKN Foundation: strategic investment in building the ecosystem (17%)
- Developers: founding team, community developers (18%)
- Purchasers: purchasers of NKN tokens (35%)

Over 25 years

- Miners: get reward for traffic relay & block maintenance (30%)



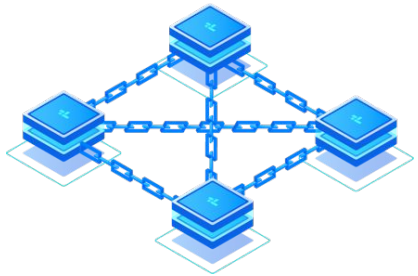
NKN Partnership Landscape

Internet companies (e.g. video streaming, IM, social network)

Application Developer

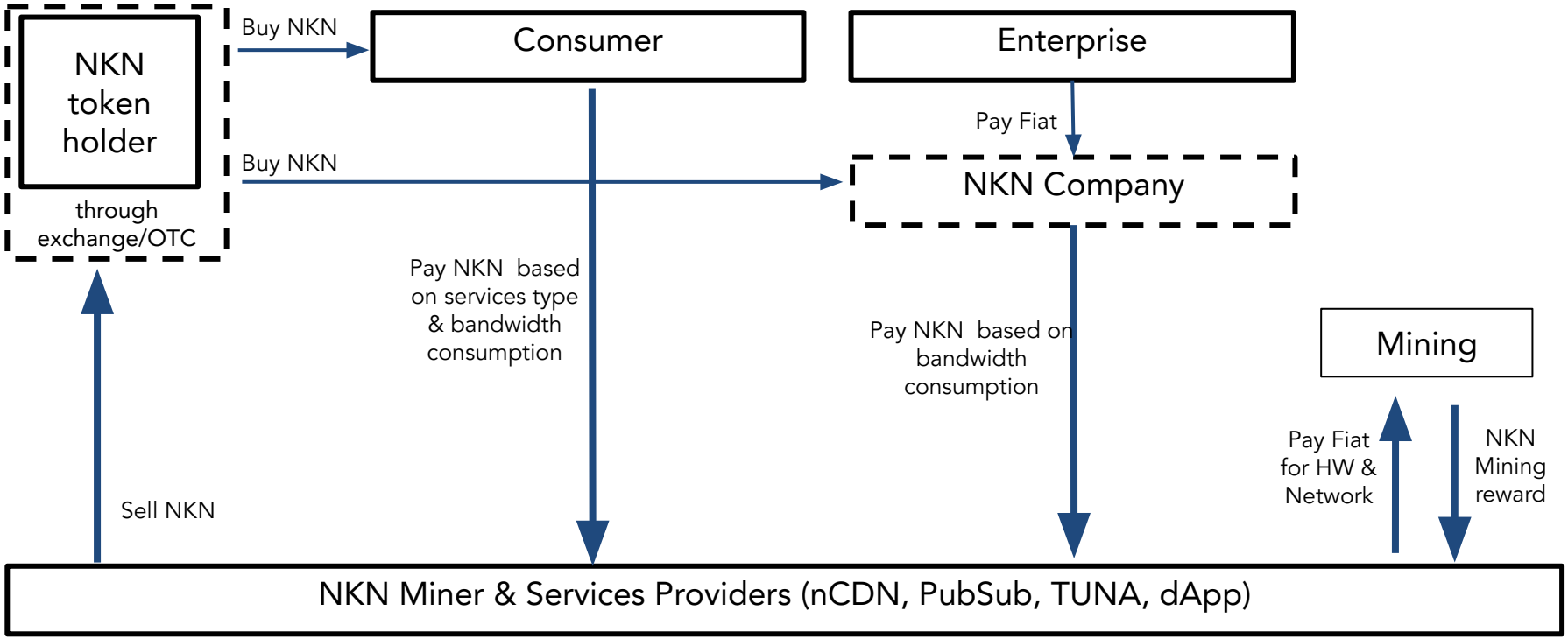
Telco/Carrier

Cloud Service Platform



Blockchain Projects

NKN token utility and circulation model



Listed Exchanges

Strategic partners & alliances

FUTURE

Project aspirations, future roadmaps

NKN roadmap beyond Mainnet: building product success

Mainnet tech and token economics

NKN 1.0

Q3 2019

Mainnet phase 1:
Scalability & security
Wallets & explorers
No swap with ERC-20
Exchange integration

Q4 2019

Mainnet phase 2:
mainnet token swap
Economic model enhance-
ments
Mobile app w/ d-chat

Q1 2020

Mainnet phase 3:
Scalability & security
VM (internal use)

Q2 2020

Mainnet phase 4:
Scalability & security
Routing & consensus
updates
New assets

NKN 2.0

Product pre-launch
Product creation (incl.
apps, dashboard, portal)
BD and trials
Partners & suppliers

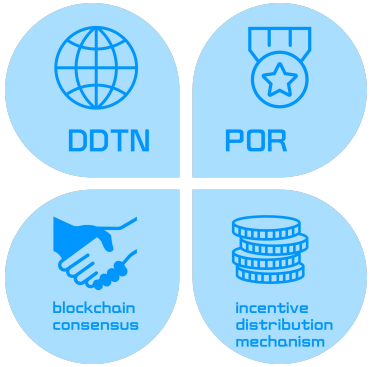
nCDN GA
Support two modes:
- Hosted Docker
- nCDN as a service
Commercial agreements

Pub/Sub GA
Hosted & Freemium
Enterprise edition: per -
missions, persistency
Commercial agree -
ments

TUNA/NanoPay GA
Multiple apps (e.g. proxy,
game streaming)
Marketplace pricing
Commercial agreements

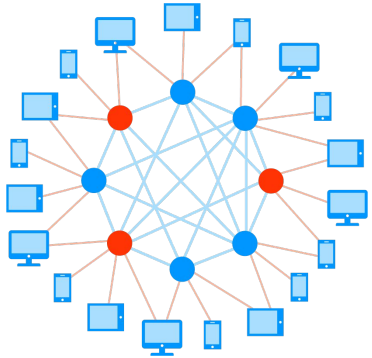
Products and commercialization

NKN Technology Directions



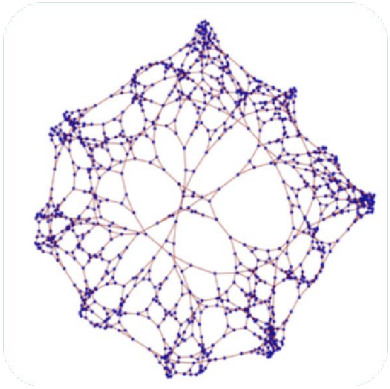
Blockchain DLT

Scale to millions of nodes
Proof of Relay
Micro payment
Instant settlement



Decentralized Cloud & Edge

True global reachability via NKN Address; Massively peer to peer data relay and caching PaaS
Smart scheduling & routing based on price, performance, utilization



Advanced Research

Self evolution of NKN network topology and routing
Using Cellular Automata for massive smart “pod” computational evolution and artificial intelligence

ABOUT

Project overview and core team

NKN Project overview

About

- NKN was founded in January 2018 by a group of entrepreneurs and engineers with many years of building networking and blockchain technology in companies like Google, Nokia, QCOM, Baidu, and OnChain.
- The ideal driving this team is that blockchain provides both technical and economic innovations to disrupt the networking business.
- The team has two sites, in Silicon Valley, California and Beijing, China.

Core team and advisors

Yanbo Li

Founder | Strategy & System Architecture

ex-OnChain co-founder

Bruce Li

Co-Founder | Strategy & Operations

ex-Googler & Nokia

Dr. Yilun Zhang

Co-Founder | Core Researcher & Developer

Ph.D. Physics, UCSD

Allen Dixon

Business Development & Compliance

ex-Nokia

Dr. Whitfield Diffie

NKN Technical Advisor

2015 Turing Award winner

co-inventor of public key cryptography

Dr. Stephen Wolfram

NKN Technical Advisor

Author of New Kind of Science

Chief designer of Mathematica and the Wolfram

NKN.ORG

Building world's largest blockchain for network sharing

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