WICRYPT

WICRYPT Litepaper

Version 1.1

The internet you deserve

Abstract //

Wicrypt is a decentralized mobile internet sharing and monetization network. Wicrypt is a virtual Internet Service Provider that gives users the power to control their own mobile internet data. Wicrypt is ISP agnostic and location agnostic. The Wicrypt protocol is a protocol that enables end to end encryption of user data, bills the user for the amount of data consumed and credits the host. The wicrypt protocol also creates a decentralized storage network making use of routers as micronodes.

The Wicrypt network is a decentralized network of routers(micro nodes) and connected clients (mobile phones, laptops, PCs, Smart TVs, Smart Watches and IoTs). The routers are powered by the custom Wicrypt firmware.
The network is not controlled by any central authority. Any user or host can acquire a supported router (micro node) and install the wicrypt firmware. The user can use this device to create a WiFi zone within the range covered by the device and anyone with a WiFi-enabled device can connect and have access to the internet. The wicrypt firmware extends these routers(micro-nodes) by increasing their storage capacity and hence enabling them to act as storage in the decentralized storage network powered by Filecoin.

The Wicrypt network is powered by a native token called Wicrypt Network Token($WNT). The tokens are used to incentivise users(WiFi Hosts) to create and manage WiFi zones that enable people to have access to the internet and also enables IoT devices to connect seamlessly. $WNT is also used to pay fees to WiFi hosts for providing routers(micro-nodes) for storage purposes. $WNT is also used to reward WiFi connected clients for using the WiFi.

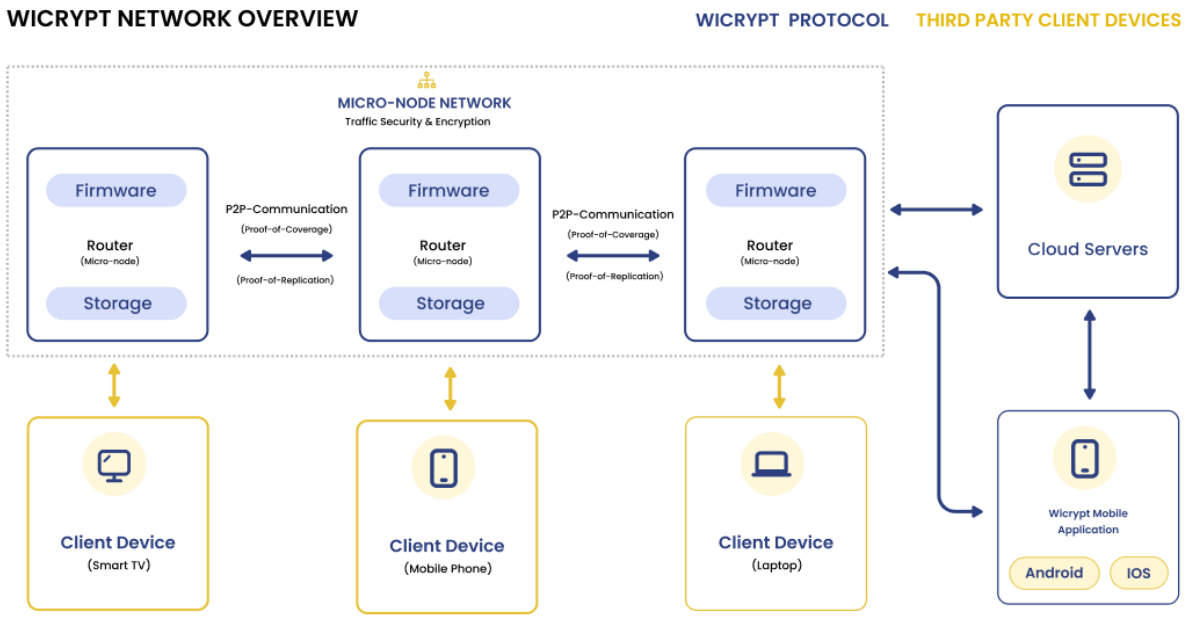
Wicrypt As A Decentralized Network //

1. $WNT has a fixed supply and the reward for setting up WiFi zones is reduced as more people create WiFi zones on the Wicrypt Network. This gives the initial $WNT holders for value as scarcity of $WNT builds over time. The reward is a function of Wi-Fi zone(router) uptime, amount of bandwidth shared in the Wicrypt network and number of Wi-Fi zones.
   The reward distribution and scarcity calculation are all handled by a reward smart contract with governable parameters.

2. The Wi-Fi hosts can set up Wi-Fi zones or participate in the decentralized storage network at their preferred times. They are incentivized by the network to stay up through network fees paid by users on the Wicrypt network and $WNT rewards.

3. Wi-Fi hosts stake $WNT to become qualified for the pre-minded $WNT rewards distributed to Wi-Fi hosts when they share Wi-Fi with their routers. To ensure good user experience for connected clients, the Wi-Fi hosts will have to have a minimum amount of router up-time per day. If this minimum threshold is not met, they lose part of their accumulated $WNT rewards.

Wicrypt Network Architecture



Hardware (Router)

Wicrypt router is a proprietary hardware design built to solve problems plagued by existing routers such as low storage capacity , low computing resources and short range.

Wicrypt routers are also designed to withstand rough handling because the WiFi hosts are able to provide internet on the go. The Wicrypt routers also have a low power and battery powered variation that is able to last for up to 10 hours and charge with Direct Current(DC). This enables WiFi hosts in remote regions of the world to provide last mile internet access with ease.

Wicrypt routers are also being laced with solar accessories to enable the routers to last all day by storing solar energy in the batteries during the day and expending the energies at night.

Firmware

The Wicrypt firmware is a Linux Embedded Distribution Environment based software that powers the operations of the router(micro-node) in the Wicrypt network.

The firmware is a highly adaptable software built to run on billions of devices and scale nicely.

The firmware enables traffic control, end-to-end encryption of user data, data usage billing and security to prevent unauthorized access to the device.The firmware syncs all information with the Wicrypt network.

Routers are usually limited by low storage capacity and low computing resources. With our combined proprietary hardware and firmware design. We are able to extend the storage capacity and computing power of these routers enabling them to act as micro-nodes or micro-servers in the entire wicrypt network.
The firmware measures data usage of clients connected to the router. It transmits this data usage to the cloud servers.

Mobile Application

Wicrypt supports both Android and iOS operating systems.
The mobile application does the following:

1. **$WNT management:** The mobile application has an inbuilt wallet that enables easy purchase of $WNT by using existing fiat or existing crypto currencies like Bitcoin, Ethereum and Binance Coin.

2. **Authentication and Authorization:** The mobile application uses a timed algorithm and a public key that generates access codes at intervals that give the user's account access to the Wicrypt network.

3. **Referral Management:** Referrals are incentivised with 0.5% of Wicrypt Network charges during data reselling as $WNT.The mobile wallet enables users see how much they have made from their referrals

4. **Peer to peer mobile internet sharing:** The Wicrypt protocol in the mobile application enables two mobile devices with the Wicrypt mobile application share and receive mobile internet data in real-time. One device will act as a WiFi host and the other device acts as a WiFi client. On the host, the mobile application generates configuration values for the hotspot setup and in some OS versions, it automatically configures the hotspot. The client can easily connect from the Wicrypt mobile application and is billed in real-time based on the billing rate set on the host's mobile application.

Cloud Servers (Distributed Network)

Our distributed network or cloud servers receive information from our routers(micro-nodes) in real time. The cloud servers perform the following:

- Reads data usage from the routers
- Allows customization of router settings from a dashboard by WiFi hosts
- Gives analytics and real time stats like health of the routers, connected clients(phones, PCs, Smart-TVs or IoT)
- **Authentication and Authorization.** The cloud servers authenticate each router based on a unique router key received from the firmware.
- **Billing of connected clients in real time.** The cloud servers measure the data usage of a connected clients and based on the billing rate set by the host, the connected client is billed accordingly and funds are transferred between client wallet and WiFi host wallet
- **Voucher Generation.** For WiFi clients who do not have the Wicrypt mobile application, the WiFi hosts can generate vouchers for them. These vouchers hold value and the value is deducted in real time as the connected client makes use of WiFi set up by a WiFi host.
- **Smart contract integration.** The cloud server integrates with the Wicrypt smart contract and performs operations such as periodically updating the smart contract with newly setup WiFi zone information(owner ID, owner wallet address, device ID, location), WiFi zone up time, overall data usage per zone and connected clients per zone. This information enables the smart contract to reward users for creating WiFi zones and ensuring the WiFi zones are up all the time.

Wicrypt Network Token($WNT) Utility //

$WNT has a variety of use cases listed below:

Version 1 (Basic Utility)

1 Staking

Hosts will stake $WNT to join the Wicrypt network and act as hosts.
Hosts need to stake $WNT to disincentivize them from malicious behaviour by requiring them to have skin in the game.
Hosts will lose staked amounts if malicious activities are carried out by the hosts.
The hosts also earn rewards in $WNT when they have met certain conditions while providing bandwidth to connected clients.

There are two types of Wi-Fi hosts in the Wicrypt network:

- **$WNT reward earning hosts:** These are hosts that stake $WNT to join the Wicrypt network and they are incentivized with $WNT as rewards when they share Wi-Fi. They also earn fees paid by users that are connected to their Wi-Fi. They have skin in the game.

- **Non- $WNT reward earning hosts:** These are hosts that share Wi-Fi to connected clients without regard for earning $WNT rewards. These hosts are not crypto-savvy.

2 Reward

$WNT is used to reward the hosts that provide active hotspots with high uptime and have shared a specific amount of bandwidth.
20% of overall network tokens will be allocated for the $WNT reward for hosts.
Clients get incentivized with $WNT when they connect to multiple hosts for a specified period of time and have consumed a specific amount of bandwidth.
5% of overall network tokens will be allocated for client reward.

3 Governance

$WNT holders are able to perform actions to govern the entire Wicrypt network. Governable parameters will include but will not be limited to

- Bandwidth amount to be shared by host to earn $WNT
- Bandwidth amount to be consumed by client to earn $WNT
- Maximum billing rate a host can set
- Minimum uptime a hosts hotspot will have in order to earn $WNT

Version 2 (Future Utility)

4 Lending for WiFi Hotspots Creation [Future]

$WNT holders can send their $WNT to a lending pool. This lending pool will be managed by a smart contract that will disburse $WNT to Wicrypt WiFi hosts for construction of WiFi zones (Solar Kiosk with WiFi) in cities and remote areas. The lenders earn an agreed percentage (between lender and borrower) of the revenue from that WiFi zone.

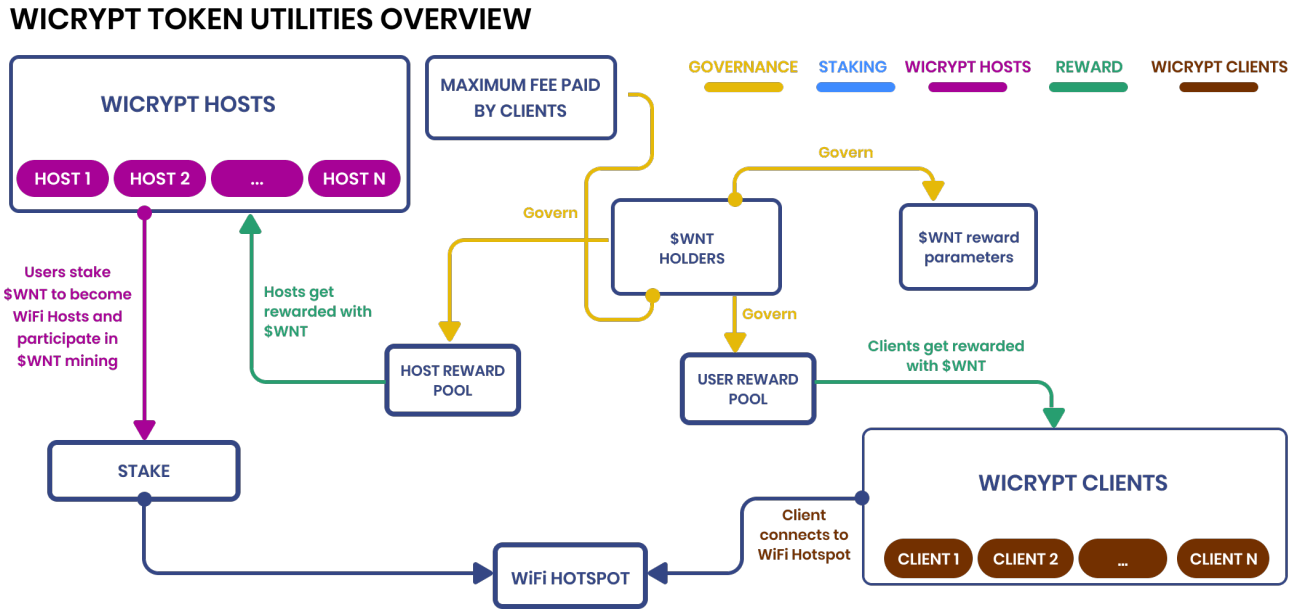
5 Micro-nodes in the Wicrypt network [Future]

Each wicrypt router is a micro-node in the wicrypt network.
Routers usually have low memory and low storage space. The wicrypt firmware enables USB sticks or harddrives to improve the storage space of the routers once it detects a storage device.
These micro-nodes are used to store one or more replicas of a file in the network hence proof-of-replication is ensured.

Any Wicrypt Host that owns a micro-node is incentivised for making his or her router a storage location. This will be integrated into the existing Filecoin protocol. This means that our hosts can earn both filecoin and $WNT

6 Donation and Incentives [Future]

Wicrypt token holders can use their tokens to send WiFi to people in areas where internet access is still very low through our platform Donatefreeinternet.org
Business owners like restaurants can incentivise their customers with Wicrypt tokens when they fill their questionnaires or fill review forms. These tokens can be used in any Wicrypt-enabled WiFi zone in the world to gain access to the internet or it can be donated to people who can't afford to purchase internet because of the high cost of mobile internet.



Wicrypt Network Token($WNT) Distribution

The smart contract rewards the users(WiFi Hosts) for creating and managing WiFi zones that enable people to have access to the internet and also enables IoT devices to connect seamlessly. $WNT is also used as a fee paid to WiFi hosts for providing routers(micro-nodes) for storage purposes. $WNT is also used to incentivise WiFi connected clients for using the WiFi.

The distribution of $WNT changes over time to ensure that the rewards align with the needs of the network.
In the initial days of the network, the majority of $WNT is used to incentivise WiFi hosts for creating, managing and securing WiFi coverage. As the network grows, the WiFi hosts earn more from fees paid to WiFi clients for using the internet as well as network fees paid for storage space provision.

Proof-of-Coverage //

WiFi hotspots are chosen by the network to issue challenges (encrypted messages) over the internet to a group of nearby hotspots. The Challenges are used by proof-of-coverage to validate wireless coverage and availability of WiFi hotspots. In the proof-of-coverage design, there are

- **Challengers: T**hey issue challenges to nearby hotspots. They receive $WNT for performing this action
- **Watch-Dogs:** they monitor and report proof-of-coverage activities for other WiFi hotspots and earn a $WNT depending on the amount of activity they have monitored and reported
- **Connected Clients:** $WNT is distributed to connected clients that access the internet through the WiFi hotspots

Single WiFi hotspots without a nearby hotspot earn small amounts of $WNT since they are unable to participate in proof-of-coverage

Conclusion //

Wicrypt is an Internet Service Provider and location agnostic protocol built into a decentralized
network of micro-nodes that gives individuals the power to become micro internet service providers on the go. Decentralizing internet service will greatly reduce the cost of mobile internet service around the world. Wicrypt has been able to prove this by leveraging on this unique design in bringing down the cost of mobile internet by over 60% in Africa where the pilot phase has been launched.

Wicrypt is building the internet you deserve.

Join Our Community