



MORSE White Paper

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1. Background

1.1. Overview

This white paper is a comprehensive description of the Morse project. Introducing the Morse organization, its products, technology, economy, Token incentives and application scenarios for project participants and interested parties to read.

Morse is a blockchain project, based on blockchain technology, practicing the spirit of blockchain; Morse is a decentralized autonomous organization (DAO), with a scientific economic incentive model. Anyone can participate under the rules of the contract, keeping the project running in a healthy and orderly manner; Morse is a global WEB3.0 social application with advanced security and privacy achieved by encrypting data in the transmission channel; Morse is a decentralized communication network with distributed deployment of communication nodes but with a collaborative work scheme, which will not affect the network communication due to the damage of individual nodes; Morse is a social metaverse with blockchain address as ID - representing a unique legal identity in the metaverse network, enabling communication and applications in the virtual world; Morse is an open ecosystem that uses communication as the foundation to build a scalable ecosystem of decentralized business applications, decentralized finance, and decentralized entertainment and social networking.

1.2. Origin of MORSE

The American artist Samuel Morse, the American physicist Joseph Henry, and mechanical engineer Alfred Vail developed an electrical telegraph system. It needed a method to transmit natural language using only electrical pulses and the silence between them. Around 1837, Morse, therefore developed an early forerunner to the modern International Morse code.

Morse code is a method used in telecommunication to encode text characters as standardized sequences of two different signal durations, called dots and dashes, or dits and dahs.

Today, we have satellite communication technology, fiber optic broadband, WIFI,

5G, and Morse code has faded out of sight, but has Morse code become a product of a backward era and deemed obsolete? In 2010, in order to rescue 500 hostages captured by the FARC, Colonel José Espesio wrote the escape message in Morse code into a song, which was broadcasted through more than 130 radio stations, helping the hostages to escape successfully.

WeChat, Viber, LINE, Kik and other instant messengers have become an integral part of people's daily lives, yet the security of personal social communication information has become increasingly important when events such as the Prism program and the Apple-FBI encryption dispute have come to light. web3.0+social may be the best solution - -establish decentralized digital identity to protect the ownership and usage of data; through cryptography and blockchain technology, we can solve the trust problem and guarantee the storage, privacy and dissemination of information and files such as text and images. Our vision is to make this product the "Morse code" of modern instant messaging - based on the most advanced technology, it can accomplish the mission of message communication while ensuring the security of information and fulfilling the user's need for decentralization.

1.3. Communication is a basic need of human economic and social life

When we look at the history of human civilization, since the time when human beings began to utilize intelligence and build civilization, they have had the need to communicate with each other and exchange information with each other. In order to facilitate communication with each other, human beings began to invent language, writing, images and the media that carry these communication messages, which have led us to our multifaceted human civilization of today.

It is now that the development of mobile communication technology has played an important role in advancing the progress of mankind. Nowadays, people are more and more inseparable from the Internet and cell phones, and the need for people to communicate with each other through cell phones and the Internet has become a basic need of life.

1.4. Personal information security has been a huge challenge for online life

As people become increasingly dependent on the network, human socio-economic activities and daily life are gradually completed through the network, information leakage, fraud, privacy snooping, network economic crimes occur frequently, information security issues have been a huge challenge in the network life.

All forms of communication information are transmitted from end to end through collection, encoding, storage, transmission, decoding and presentation. If in a network where information security is not guaranteed, everyone's personal information, privacy and communication contents are at risk of being leaked.

End-to-end information encryption transmission technology is an effective way to solve the security of communication information. In the process of information transmission and exchange, avoid plaintext transmission, even if intercepted or leaked, the information without the private key password can not restore the original information.

1.5. Problems with centralized communication networks

Most of our existing communication tools are products of the centralized era and use a centralized network structure.

The centralized network is concentrated in one node or data center in terms of physical storage and processing of information, and there is a risk that the whole network will be paralyzed or data lost due to uncontrollable factors (such as earthquake, war, etc.) or human reasons. Nowadays, many of people's messages, instructions and data are digital assets, and network risk is asset risk.

A centralized communication service is a closed network where all information is theoretically available and identifiable in the backend of a centralized server, and thus there is a risk of information being artificially compromised, hacked, or exploited by interest or political groups.

Decentralization is undoubtedly the best way to address such risks.

1.6. Blockchain Technology Revolution

From the trend of social development of next-generation information technology, the Internet is entering the era of value Internet from information Internet.

Blockchain technology is considered to be the next generation of disruptive core technology, after the steam engine, electricity and Internet. If the steam engine released people's productivity, electricity solved people's basic needs of life, and the Internet completely changed the way of information transmission, blockchain, will be the machine for constructing trust, will probably completely change the way of value transmission of the whole human society. Blockchain will have a huge impact on the existing economy and society and is expected to reshape the shape of human Internet activities.

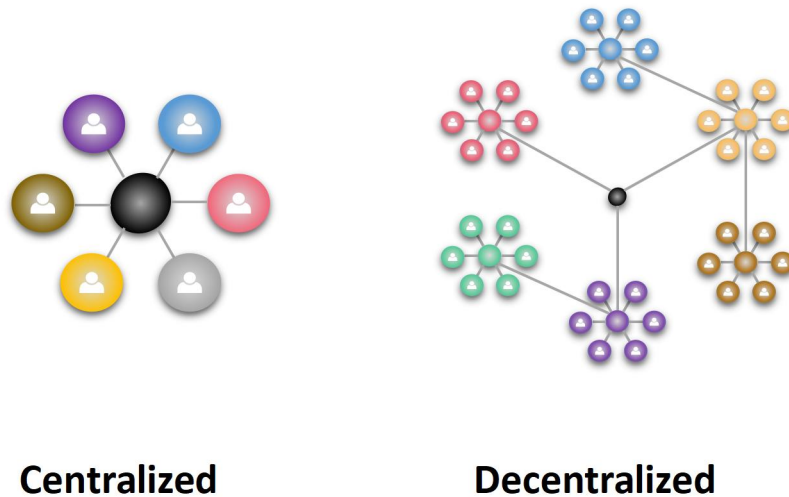
The trusted network established by blockchain technology will bring a fundamental revolution to the traditional Internet and propel society into the era of trusted network, followed by innovations in various industries and a revolution in blockchain technology.

Blockchain technology is not a single technology, but a comprehensive technical system that integrates the results of research based on many aspects. It is characterized by decentralization, transparency, immutability, and everyone can participate in database recording and verification.

1.7. Reconfiguring communication services with blockchain technology

Blockchain has three core technologies, which are: consensus mechanism, cryptography and distributed data storage. Consensus mechanism is a decentralized and collaborative working technology mechanism that can schedule and manage a centralized system to achieve decentralized collaborative operation by consensus algorithm with some consensus mechanism. so that it can be used for the decentralized construction of communication networks. The construction and maintenance of decentralized communication nodes are achieved through consensus mechanisms and incentive models, and decentralized competitive and collaborative relationships are formed between nodes. Cryptography is the foundation of blockchain, ensuring the verification of the identity of the chain owner and the security of asset data. Using cryptography to encrypt the data from end to end of communication, regardless of any node passed during data transmission, the data can

only get decrypted when it reaches the end, which ensures the privacy and security of data transmission. Distributed data storage ensures that critical data is immutable and makes all processes transparent, thus ensuring the reliability of communication data in the network.



2. Product introduction

2.1. SMS Service

The product provides services in the form of desktop and mobile APP, supporting PC, cell phone, PAD and other hardware terminals. It supports operating systems such as Windows, MacOS, Linux, Android and IOS, covering the needs of most office and mobile people.

The product is based on the provision of communication services, supporting the basic communication services of network point-to-point end users.

It supports sending and receiving instant messages with multimedia content such as text, pictures, voice and video.

It supports the transmission of data such as emoji packets and arbitrary file attachments.

2.2. Group Communication Services

The product supports P2P single-line private communication service for users,

and also supports feature-rich group communication service.

Any communication group can be created as needed.

The node can manage the settings, members and various permissions of the self-built groups.

Group members can send and receive group messages and view group member dynamics to achieve group communication.

2.3. VoIP real-time communication

In addition to instant multimedia message service, the product supports real-time voice and video calls.

The product adopts the WebRTC real-time communication protocol, thus providing high-quality real-time calls and video services according to the network dynamics. In a group, multiple people can communicate online simultaneously in real time, thus achieving the service capability of video conferencing.

2.4. Encrypted communication capabilities

Encrypted communication is a major feature that distinguishes this product from other existing communication APPs. Through advanced end-to-end encryption technology, combined with block-chain decentralized wallet (key pair), the privacy and security of communication between users will be ensured.

Only the target communication end-user can restore the information, any encrypted data and communication information is intercepted or leaked during transmission, without the legitimate key decryption owned by the end-user, it will not be able to peek into the encrypted communication information.

2.5. Token circulation and drive capability

Communication and group functions are just convenient tools, coupled with pass circulation and consensus mechanisms for each application scenario is the key to elevate a mere tool into a self-driven and self-circulating economic system.

Communication and community are established for a certain economic activity or a certain work need. By providing the driving ability of tokens, the whole process of the life cycle of a certain economic activity can be reached through the circulation

of tokens, payment or automatic contract deduction. Through the tamper-evident, open and transparent characteristics of block chain, the whole process of activity can be run under more just rules, thus realizing richer group functions and value transfer capabilities. Make the communication APP not just a tool, but a trusted community and economic cooperative.

2.6. Scalable Business Platform Capabilities

Communication + community + block chain makes it possible to transform the communication tool into a decentralized application (DAPP) platform.

Since the introduction of WeChat Pay, WeChat is no longer just a chatting tool, but a platform for various service numbers, small programs and public numbers, which are all commercial entities which can hold various commercial activities through it, making the platforms capability and value qualitatively different.

The support of tokens provides the ability to make payments. And the decentralized and trusted network features of block chain, in addition to providing reliable and secure payment capabilities, also contractualize the rules of commercial contracts, thus combining payments and contracts to form a trusted business environment. The decentralized wallet is the most reliable community ID, which not only represents the 'person' in the commercial body, but also represents the asset and value capability of this person, and comes with credit, which provides capabilities in expansion and imagination in regard to supporting various commercial DAPPs.

2.7. Basic application scenarios

After the token is added, the application scenarios are as follows.

Application Scenario - Private Chat

By adding friends and selecting them, you can have a P2P private chat between friends.

Private chat can send text, picture, voice or video, as well as file attachment or cell phone location information.

Private chat messages are encrypted by default to ensure the privacy of the chat.

Private chat content can be set to require payment, and the other party has to pay the corresponding Morse tokens to read the content.

Application Scenario - Group Chat

After creating a group chat room or being invited into a group, you can chat within the group.

Group chats can send text, pictures, voice or video, as well as file attachments or cell phone location information.

Group chat messages are encrypted by default to ensure the privacy of the chat.

Group chat content can be set to require payment, and the other party has to pay the corresponding Morse tokens to read the content.

Application Scenario-Moments

Users can post moments, and the settings can be divided into for friends only or public.

The content can be in the form of text, photos or other multimedia.

The moments content can be set up for paid viewing, and users need to pay the corresponding Morse token to unlock it.

The moments content can be set to be rewarded by users, and viewing users can choose the amount of the reward and pay Morse tokens to show their support for the creator.

Application Scenarios - Posting Ads

Advertisers can choose communities, friends, specific squares, and nearby customers (Location Based Services) to place ads.

The advertiser sets the number of ads to be placed (or the total amount) and the cost for users to click and watch, and pay in Morse tokens when the ad is placed, and the user will receive the corresponding ad revenue when they click on the ad.

3. Technology Introduction

3.1. Introduction to Morse Technology

Morse is an open, secure, decentralized, real-time communication network built on block chain technology. It provides a global, decentralized, encrypted, open platform standard for interoperable, decentralized, real-time communications over IP with the following technical features.

- Based on open standards in the form of common data specifications
- Fully interoperable, easily interoperable with other communication systems
- Decentralized, no central point, no single point of dependency, anyone can host

their own server and control their own data

➤ Real-time operation, enabling instant exchange of data systems

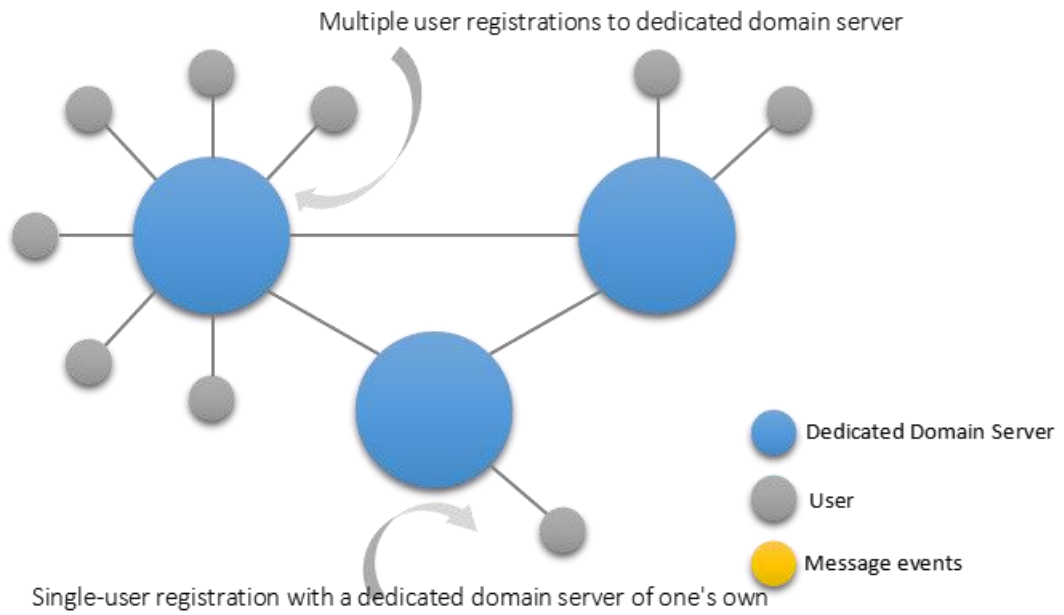
In the system, each user connects to a specific dedicated domain server. Users can participate in rooms created on any of Morse's dedicated domain servers, and the server stores and provides a history of connected users and account information, as well as a history of the rooms to which the user belongs. Each dedicated domain server is linked to other dedicated domain servers. This means that users can communicate instantly with any other user on any server. At the same time, users can host their own private domain servers and thus control all of their own data. Self-hosting also allows users to customize the private domain server to meet their individual needs, including the ability to bridge to other chat networks (e.g. IRC, XMPP, Discord, Telegram, etc.).

The user's dedicated domain server synchronizes the message history with other dedicated domain servers, and the user's dedicated domain server is responsible for storing the state of the room and providing the message history. Every message sent by a user in the room he/she is logged into is synchronized to all other dedicated domain servers participating in that room. If one of the dedicated domain servers goes offline, all other users in the room can continue to communicate, and once that server comes back online, the system will resend it all the messages that the server missed while it was off.

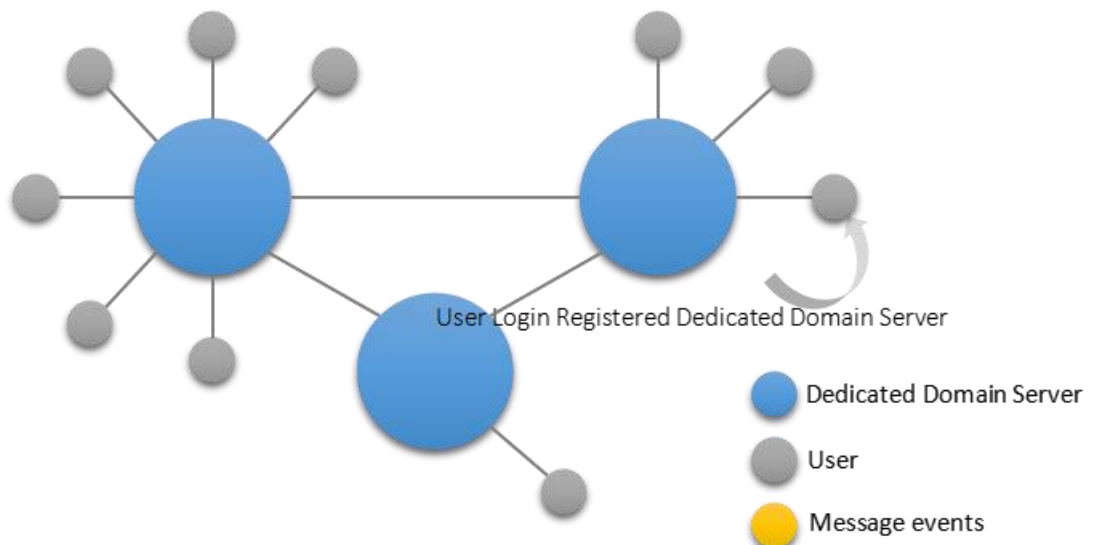
In the system, users' privacy and security are fully protected. Conversations between users and users and between users and groups can be protected by end-to-end encryption, eliminating the possibility of malicious third-party eavesdropping.

The schematic diagram of the working principle of the system is as follows.

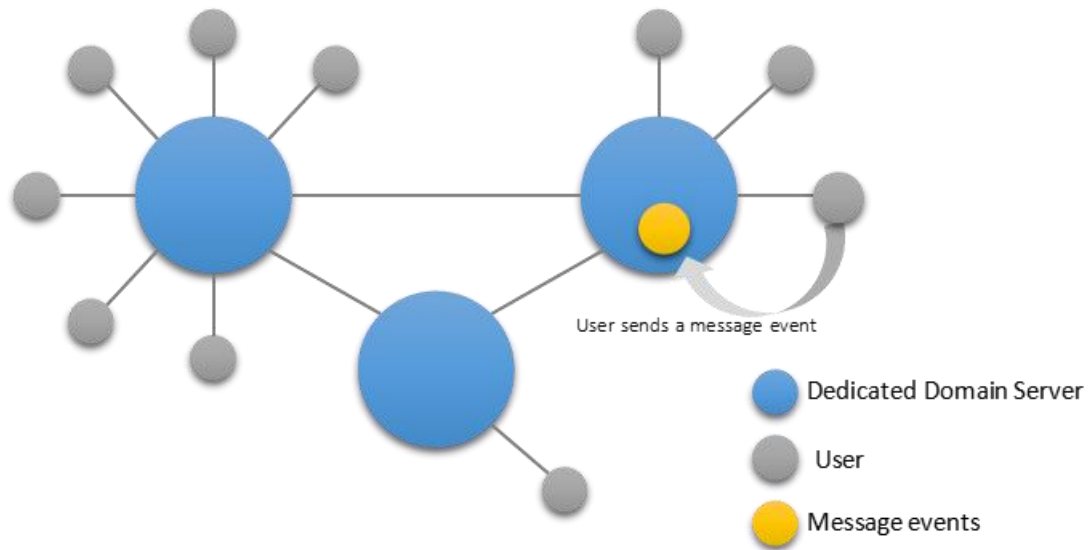
Step 1: The Morse system, consisting of a number of dedicated domain servers and users.



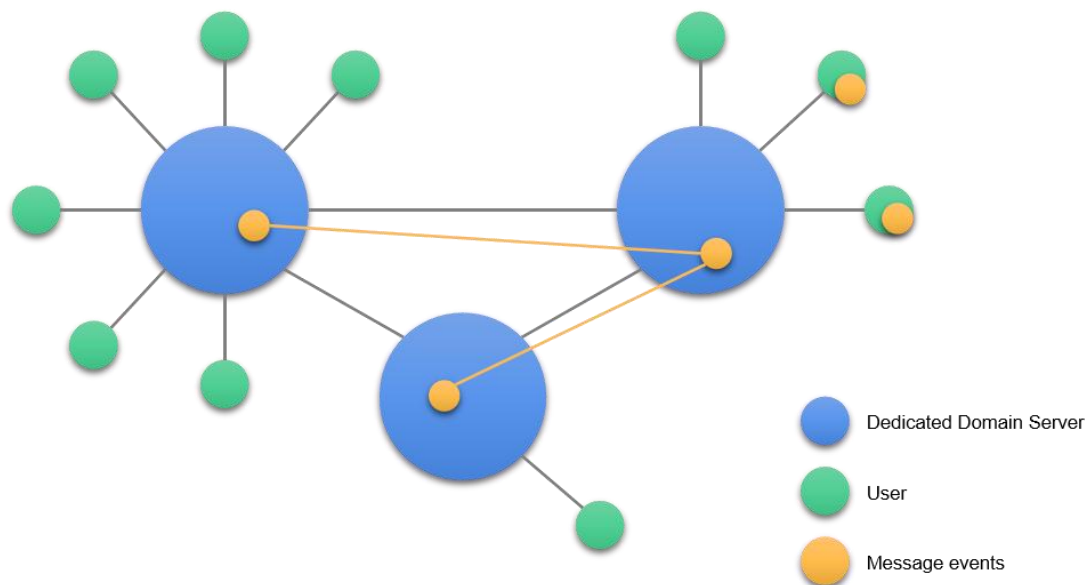
Step 2: The user logs into their own dedicated domain server and logs in with their own account.



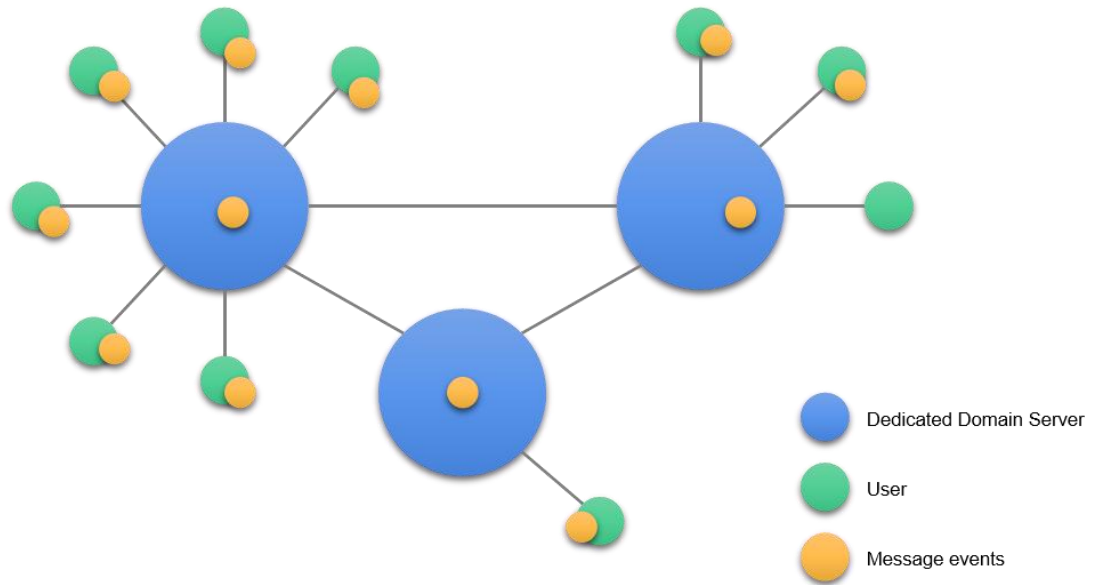
Step 3: The user sends a message which is sent to the room specified by the user's client and an event ID is provided by the dedicated domain server



Step 4: The dedicated domain server to which the user belongs sends message events to each dedicated domain server in the room that belongs to its user account, and sends events to each local user client in the room.



Step 5: The remote dedicated domain server sends the message event to the logged-in user client in the same room.

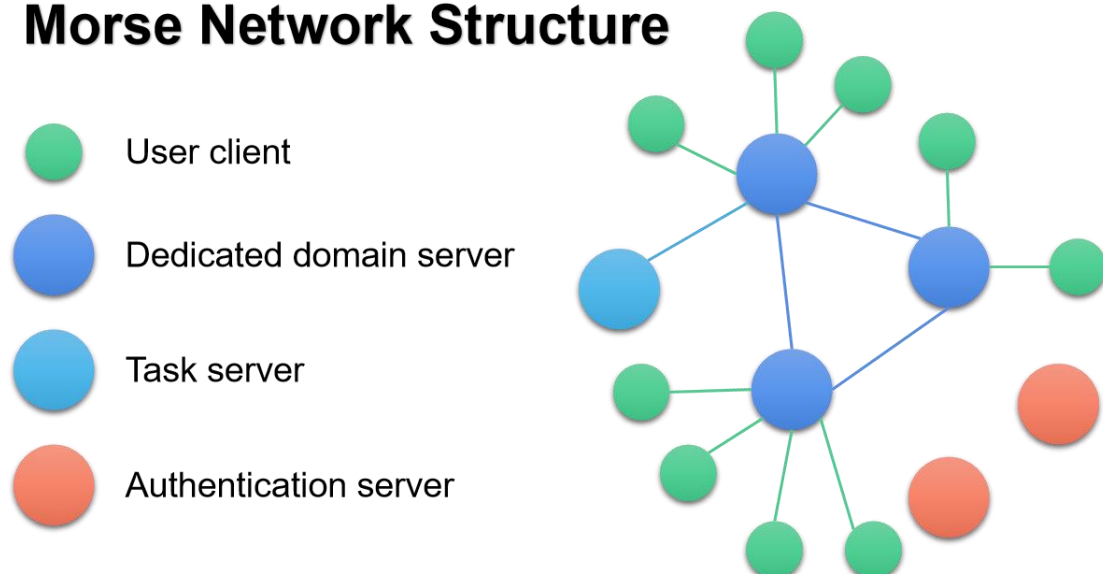


3.2. Morse Network Structure

Physical Structure

The physical structure of Morse network is divided into four parts: user client, dedicated domain server, task server, and authentication server. Among them, the user client is responsible for implementing interactive services with users; the dedicated domain server is responsible for all instant messaging services; the task server is responsible for all service scheduling and service provisioning; and the authentication server is responsible for account authentication and secure communication for all customers.

Morse Network Structure

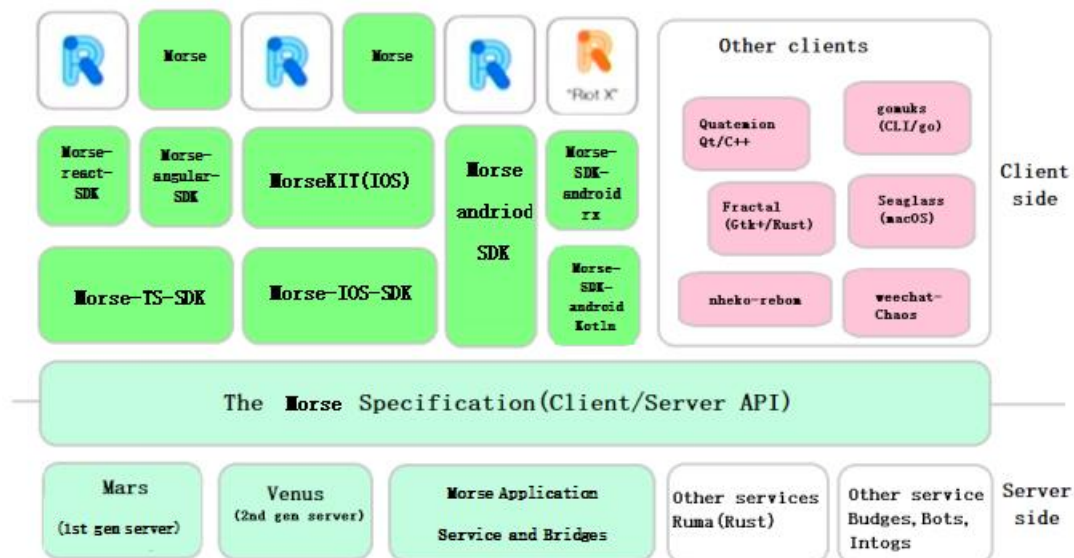


Logical Architecture

Morse defines APIs for synchronizing scalable JSON objects called "events" between compatible clients, servers and services. The client is typically a messaging/VoIP application or IoT device/hub and communicates by synchronizing its communication history with its dedicated domain server using a "client-server API". Each dedicated domain server stores communication history and account information for all its clients and shares data with the broader Morse ecosystem by synchronizing communication history with other dedicated domain servers and their clients.

Clients usually communicate with each other by sending events in the context of a virtual "room". The room data is replicated across all dedicated domain servers whose users participate in a given room. Therefore, no single dedicated domain server can control or own a given room. The dedicated domain server models the communication history as a partially ordered event graph called the room "event graph", which is synchronized with the final consistency between participating servers using a "server-server API". This process of synchronizing shared conversation histories between dedicated domain servers running on different sides is called "federation", and Morse optimizes the availability and partitioning properties of the CAP theorem at the expense of consistency.

MORSE Network Logical Architecture



3.3. Morse Technology Principle

➤ Bridging (under development)

Bridging is the most important link technology in Morse, which enables interconnection of different platforms and different specifications of communication. It is a store-and-forward technology that interconnects networks at the link layer, allowing the connection of several different private area communication LANs. A bridge receives MAC frames from one network, unpacks them, checks them, and then reassembles them in the format of another network and sends them to its physical layer.

Portal Room

A bridge can register itself as a block in the control room alias namespace, allowing Morse users to join remote rooms transparently. Generated Morse rooms are typically automatically bridged to a single target remote room. Access control for Morse users is typically managed from the remote network side of the room. This is called a portal room and can be used to jump to a remote room without any configuration.

Room with piping

The Morse system can connect an existing Morse room to one or more specific remote rooms by configuring a bridge (which any user can run). Access control for Morse users must be managed from the Morse side of the room. This is useful for linking different communities together using Morse.

Bridging Implementation

The easiest way to exchange messages with a remote network is to have the bridge use one or more bridge bots with predefined user logins to the network - often called MorseBridge. They relay traffic on behalf of another user, but this has had the troubling consequence that all metadata about the message and the sender is lost.

Some remote systems support methods for entering messages from "fake" or "virtual" users, which can be used to represent Morse-side users as unique entities in the remote network. For example, Slack's inbound webhook allows on-demand creation of remote bots that allow Morse users to appear correctly as virtual users in the timeline. However, the resulting virtual users are not real users on the remote system and therefore have no profile and cannot implement quick completions or send messages directly, etc. They also cannot receive typing notifications or other information. They're also not available through the bot API.

A better implementation of the bridge is to use the bridge to log in to the remote service as if it were a true third-party client of that service. Therefore, the Morse user must have a valid account on the remote system. In exchange, Morse users can manipulate their remote account so that other users on the remote system do not even know they are talking to the user through Morse. The full semantics of the remote system are available for the bridge to expose to Morse. However, the bridge must handle the authentication process in order to log users into the remote bridge.

This is essentially how the Morse-appservice-irc works (if it is configured to log into a remote IRC network as a "real" IRC nickname). Morse-appservice-gitter is being extended to support puppeted and bridgebot-based operations.

Morse allows users to control their accounts on a remote network. Ideally, this control should work in both directions, so if a user logs into their local telegram client and starts a conversation, sends a message, etc., these should reflect back to Morse just as if the user had done them there. This requires the Morse bridge to be able to manipulate the Morse side of the bridge on behalf of the user.

Application Services

Application services are separate modules in Morse that sit next to a cluster of dedicated servers and provide arbitrarily scalable functionality separate from the implementation of the dedicated server cluster. They use JSON to communicate over HTTP. Application services are very similar in function to traditional clients, but they have more power than regular clients. They can keep the entire namespace of room aliases and user IDs for themselves. They can monitor the events of the room, or any event against any user ID silently.

One of the main use cases for application services are protocol bridges. Our dedicated domain server on Morse links to various IRC channels and networks. It resides as a user in the Morse room of the free-node channel we want to link to, retains the virtual user ID created, and can bridge IRC rooms on the run at will. Features of the IRC application service that we have implemented include: channeling specific to Morse room bridging; dynamic channeling to Morse room bridging; bi-directional PM support; IRC nickname change support; Ident support; etc.

Application services have great potential to create new and exciting ways to transform and enhance the core Morse protocol, which is a powerful component for extending the capabilities of dedicated domain servers, but they are limited. They can only operate in a "passive" manner. For example, it is not possible to implement

application services that censor profanity in a room because there is no way to prevent events from being sent. In addition to the fact that censorship will not work when end-to-end encryption is used, all federated dedicated domain servers need to reject the event to stop the development of inconsistent event graphs. To "proactively" monitor events, another component called a "policy server" is required. In addition, application services may cause performance bottlenecks because all events on the master server must be sorted and sent to the registered application services.

➤ **Encryption**

End-to-end encryption

End-to-end encryption in Morse is based on the Olm and Megolm encryption ratchets.

Each user may have multiple devices (desktop client, web browser, Android, iPhone, etc.). When a user uses a client for the first time, it should register itself as a new device. If the user logs out and logs in again as another user, the client must register as a new device. It is crucial that the client creates a new set of keys for each device. The lifetime of the device will depend on the client. In the Web client, Morse creates a new device each time the user logs in. In the mobile client, if the login session expires, the device can be reused if the user is the same. Do not share keys between users.

Devices are identified by a device ID (which is unique within the scope of the given user). By default, the registered endpoint automatically generates the device ID and returns it in the response; the client is also free to generate its own device ID, in which case the client should transmit the device ID in the request body.

Encrypted communications involve the use of the following key pairs.

Ed25519 fingerprint key pair:

Ed25519 An asymmetric encryption system for signing messages:

In Morse, each device has an Ed25519 key pair that is used to identify the device. The private key of the key pair should be stored only in the device, but the public key is published to the Morse network.

Curve25519 Identity key pair:

Curve25519 is an asymmetric encryption system that can be used to establish shared secrets. In Morse, each device has a long-lived Curve25519 identity key that is used to establish an Olm session with that device. Again, the private key should be

kept only in the device, but the public key is signed and published to the network using the Ed25519 fingerprint key.

Curve25519 One-time key:

In addition to the identity key, each device creates multiple Curve25519 key pairs, which are also used to establish Olm sessions, but can only be used once. The private key is stored on the device.

When a user starts up, the system creates a number of one-time key pairs and publishes them to the user's dedicated domain server. If another user wants to establish an Olm session with that user, he needs to get one of that user's one-time keys and create a new one of his own. These two keys are used together with the two user's identity keys to establish an Olm session between the users.

Megolm encryption key

Megolm key is used to encrypt group messages (actually it is used to derive AES-256 key and HMAC-SHA-256 key). It is initialized with random data. Each time a message is sent, a hash is computed on the Megolm key to derive the key for the next message. Thus, the current state of Megolm keys can be shared with users, allowing them to decrypt future messages, but not past ones.

Ed25519 Megolm Signature Key Pair

When a user creates a Megolm session, he also creates another Ed25519 signing key pair. This is used to sign messages sent through that Megolm session to authenticate the user. The private key of the key remains only on the device, and the public key is shared with the other devices in the room next to the encryption key.

Implement advanced E2EE features for cross-signature

Emoticon validation is part of the validation model called SAS for short validation strings. In addition to emoji validation, there is also numeric validation. There are two ways to authenticate other devices: oneway is through to_device messages, and the other is through messages in-room. Authentication via to_device messages is typically used to authenticate devices, while authentication via in-room messages is typically used to authenticate people. The first type of authentication is performed by two devices sending messages to each other, either via to_device messages or via messages in-room. The device that wants to authenticate the other device sends an authentication request message and its supporting method. The device to be authenticated answers with a ready command and informs the authenticating device which methods it supports. In the client UI, the device to be authenticated pops

up a new authentication request after receiving the authentication request message. After both parties accept the start, either party can send a validation start message to specify a specific validation method. If both parties send a validation start message and the validation methods do not match, the validation request is cancelled. If they also match (e.g., the user is verifying their own device), the device ID in the smaller dictionary order is used. This ensures that the authentication start message uses an explicit object. Both parties then implement the authentication process using specific authentication methods. If everything is successful, both parties send each other a verification completion confirmation message after the verification is complete.

Cross signing eliminates the need for each device to verify other devices, users only need to verify other users, and users only need to verify themselves once for each new session (login). To do this, each user has three keys: a master key, a self-signing key, and a user-signing key. The master key will sign the self-signing key and the user-signing key. The self-signing key will then sign your own device key, and the user-signing key will sign everyone else's master key. The purpose of splitting it into three keys is that in case the self-signing key or user-signing key is compromised, the user can easily exchange them while still retaining the master key. Since the master key is only used to sign your own user signatures and self-signing keys and is rarely used, it is very unlikely to be accessed by a hacker attack. By using cross-signature verification, a secure storage sharing system is implemented, providing a way to store secret data on the server, for which the data server administrator or anyone else cannot access it. The user performs cross-signature verification using a device containing the private key to generate the correct signature and verify others. Secure storage depends on the keys used to encrypt the actual secrets stored. These keys need to be provided by the client. The keys in user account data have metadata information, for which the secure storage key contains <keyId>. This key ID object contains a MAC and an IV to easily verify that the user has the correct key and, if there is also a password associated with it, some information about how to generate the key from the password. The private key, used for cross signing, can only be a string (not binary data) and is stored encrypted in the account data of your account. Inside the encrypted object, there is a mapping of the key ID to the key's ciphertext, iv and MAC.

4. Economic Model

The benign operation of a project needs to be driven by giving reasonable incentives and equity distribution based on contributions. The formation of a self-running virtuous economy is the key to guaranteeing that the entire DAO drives the implementation of decentralized projects.

Morse practices the core value of WEB3.0, the value theory that contribution is value, data is value, and creation is value. By using POC (Proof Of Contribution) mechanism, user behavior (investment, DAO practice, community promotion, community creation, content creation, etc.) generates power values by quantifying contribution behavior through algorithms, and the reward for those who provide contribution is determined by calculating the power values of each node's contribution.

This economic model specifies the incentive rules and token generation and use rules of this project.

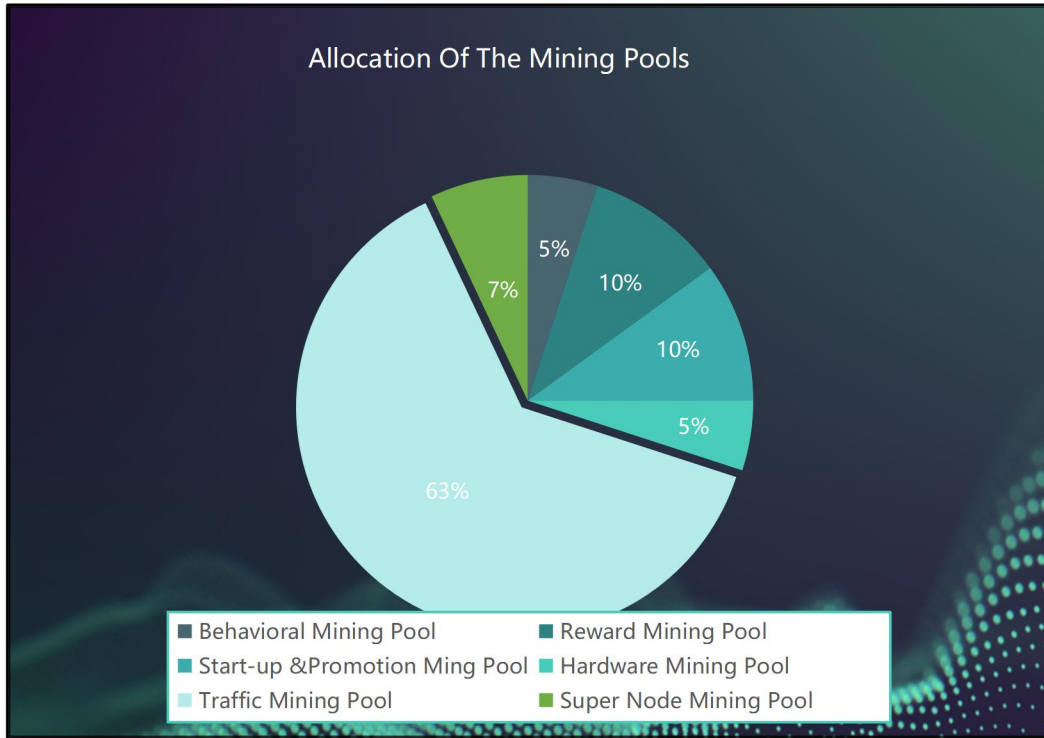
4.1. TOKEN Distribution

Morse tokens were issued in a total of 330 million.

4.2. Allocation of the major mining pools

All tokens are generated by mining, and tokens are allocated to five mining pools, as follows.

Traffic mining pool 63%, Reward mining pool 10%, Behavior mining pool 5%, Hardware mining pool 5%, Startup & Promotion mining pool 10%, Super node mining pool 7%.



4.3. Traffic mining pool

63% of the tokens are used as a traffic mining pool for all network nodes to mine.

All network node users can become miners, and users can obtain traffic power by burning tokens to provide traffic value to the network and obtain mining revenue.

4.3.1. Traffic power

Traffic power refers to the capacity carrying capacity of the communication system provided by the miner for the system to be used by the users. The higher the carrying capacity, the more users can be allowed to communicate at the same time. Miners gain capacity by providing capacity fuel, the higher the capacity, the higher the power. Miners derive revenue from the system by providing this power. In the system, each miner receives system rewards by providing this communication power to the system.

Traffic power fuel: Miners gain traffic power by providing traffic power fuel. The stronger the capacity capability, the stronger the communication power available to users, and the higher the power, the greater the rewards gained. Capacity will be converted into traffic power and calculated into total power of miners by weighting,

thus sharing the daily mining rewards.

The fuel for traffic power is obtained by burning tokens, which are burned and entered into the system black hole account. The initial phase of the project 200 tokens are burned in exchange for 1 traffic power value. 1 power value capacity is the value of network and CDN network bandwidth that provides the average total communication of 1 person for 1 year in the system (taking into account the average value of load balancing and concurrency apportioned to individuals). The price of fuel required for one traffic power value is adjusted in real time according to the system consensus algorithm.

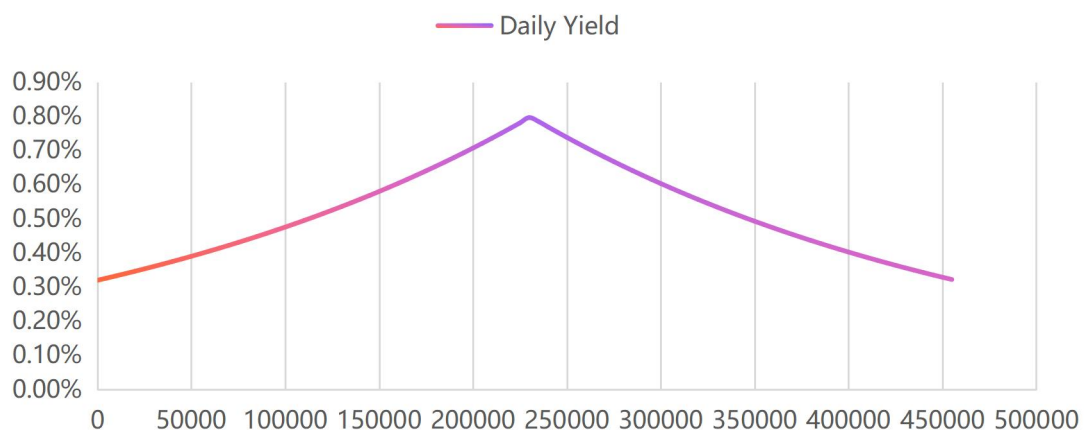
Each traffic power is valid for 1 year, after 1 year the value of this power expires.

4.3.2. Release Rules

The initial daily mining output of the pool is 0.8% of the amount of burned tokens corresponding to the power value (i.e., 0.8% return on the amount of burned tokens per day), and the power value is calculated from 1. For every increase of 5000, the output decreases by 2% (i.e., 1~5000, the return is 0.8%, 5001~10000, the return is $0.8\% \times 0.98$; and so on).

When the power value increases, the output return rate decreases, when the return rate drops below 0.32%, the return rate no longer decreases. The power value continues to increase, and for every 5,000 increase, the rate of return rises by 2%, (i.e., for 1~5,000, the rate of return is 0.32%, for 5,001~10,000, the rate of return is $0.32\% \times 1.02$; and so on).

And so on in a regular cycle.



4.4. Reward mining pool

10% of the tokens are assigned as a reward mining pool. The core concept of the reward mining pool is to be fairer and not to harm the interests of ordinary users, and to target founder nodes, partner nodes, pioneer nodes and miner referral mining that contribute more to the network for additional mining output.

Reward mining pools, with 20% of maximum output in the first year, will decrease by 10% each year.

4.4.1. Founder Node and Partner Node

23 founder nodes are established worldwide.

At the beginning of each month, a selection is made at zero o'clock, after meeting the selection requirements, the selection algorithm is automatically sorted according to the current power value of the node, the power value of the individual community, and the added power value of the node community in the same month, and the top 23 nodes are selected as founder nodes.

230 Partner Nodes established worldwide.

At the beginning of each month, a selection is made at zero o'clock, after meeting the selection requirements, the selection algorithm is automatically sorted according to the current power value of the node, the power value of the individual community, and the added power value of the node community in the same month, and the top 230 nodes are selected as partner nodes.

4.4.2. Fixed rewards for founder nodes and partner nodes

The founder nodes and partner nodes are the main driving force of the project, and a fixed reward will be released to them from the reward pool every day.

4.4.3. Performance rewards for founder nodes and partner nodes

The reward pool is based on the maximum of the current daily output (according to the annual output/365 as the daily output), and after the daily output first produces the fixed rewards of the founding nodes and partner nodes, the remaining is used as the performance rewards of the founding nodes and partner nodes and miner referral rewards.

Total daily output of founder node performance reward = (daily output of reward

mining pool - fixed reward for founder nodes and partner nodes)*35%

Founder nodes distribute that portion of the reward daily based on rankings, which are rated based on node traffic power, individual community power, and daily node community added power.

Total daily output of partner node performance reward =(daily output of reward mining pool - fixed reward for founder nodes and partner nodes) * 65%

The partner nodes distribute that portion of the reward daily based on rankings, which are rated based on node traffic power, individual community power, and daily node community added power.

4.4.4. Founder nodes and partner nodes mining period rewards

Both founder nodes and partner nodes have the opportunity to be rewarded with 12 months of mining period corresponding to the amount of tokens burned.

Reward downgrade

In the identity assessment at the end of each month, if the original founder node or partner node identity is lost, the mining period reward previously obtained will be recalculated according to the power of the identity after losing the assessment, and the end date remains the same, the mining period reward stops if the identity drops to normal miner.

4.4.5. Referral mining rewards

Miners promote new miners to mine, and when the new miners burn tokens for the first three times, the output is rewarded to the referrer by a percentage, released linearly over 100 days. The reward amount is distributed according to the cumulative amount of tokens burned by yourself and the number of tokens burned by your referee. Secondary rewards are also available.

4.5. Hardware Mining Pools

5% of the total amount of tokens is set as a hardware mining pool, which is used to provide hardware servers and network bandwidth services required for node and user network communication.

The hardware mining pool is released on an average of 5 years, with an average daily release to cover the costs incurred for hardware storage space and bandwidth.

After 5 years, the system will take part in the basic services, transaction fees, as

the basic system hardware overhead costs, if the fee can not maintain the current system hardware network overhead that the community voted, for example, video and other high resource ratio of the services can be charged a certain amount of communication costs to subsidize the network operation needs.

4.6. Startup & Promotion mining pool

10% of the tokens will be used as project start-up and as a promotion mining pool for project Genesis start-up, R&D, initial network construction, promotion and publicity mining.

4.6.1. Pioneer Node

500 Morse Pioneer Nodes established worldwide.

At the beginning of each month, a selection is made at zero o'clock, after meeting the selection requirements, the selection algorithm is automatically sorted according to the current power value of the node, the power value of the individual community, and the added power value of the node community in the same month, and the top 500 nodes are selected as pioneer nodes.

4.6.2. Fixed rewards for pioneer nodes

A fixed reward will be released to pioneer nodes from the mining pool every day.

4.6.3. Performance rewards for pioneer nodes

Gradient distribution of performance rewards to pioneer nodes based on daily personal community performance.

4.6.4. VIP Node

VIP nodes are acquired by burning a fixed number of tokens at once. There is no upper limit to the number of VIP nodes.

4.6.5. Morser

1000 Morsers established worldwide.

At the beginning of each month, a selection is made at zero o'clock, after meeting the selection requirements, the selection algorithm is automatically sorted according to the current power value of the node, the power value of the individual

community, and the added power value of the node community in the same month, and the top 1000 nodes are selected as Morsers.

4.6.6. Morser review revenue

Morsers can earn review revenue by reviewing users' Larks.

4.7. Behavior Mining Pools

Behavior Mining is a cornerstone of the Morse ecosystem, aligning user interests with platform growth and vibrancy. It transforms passive users into active contributors who not only enhance the community but also earn rewards for their actions. This innovative approach to incentivizing engagement fosters a robust and thriving Morse ecosystem, where everyone has the opportunity to participate, contribute, and be rewarded.

The total amount of mining pool for behavioral mining is 5% of the total tokens. 10% is released annually. Average daily release. 4520 tokens per day.

*Behavioral mining = Personal power*daily output*20%+invitation power*daily output*40%+activity power*daily output*40%*

Personal power

Individuals who exceeds 1P can qualify for behavioral mining. Personal power account for 50%, personal daily additions of power account for 50%.

Invitation power

Invitation power is the effective power that a user can generate by inviting other users to build their own community. Invitation power is dynamically correlated with the number of users and miners in an individual community. Number of miners invited accounts for 40%, number of miners added daily accounts for 40%, number of general users invited accounts for 10%, number of general users added daily accounts for 10%.

If the number of general users exceeds 10 times the number of miners, the invitation power will be 0.

Miners: Users with power greater than 0.1P

Activity power

The activity power is composed of individual activity and the activity of invited miners and the activity of normal users. Personal activity accounts for 30%, invited

miners activity accounts for 50%, invited normal users activity accounts for 20%.

Factors affecting activity: Online time-30%, Times logged into the DEX-15%, Number of games played and time spent-15%, Normal group chat-10%, Personal chat-15% , The number and quality of posts on lark are all included in the calculation-15%

4.8. Super Node Mining Pool

The Morse Super Node Mining Pool will provide our community with an incentive mechanism to actively contribute to the prosperity and innovation of the Morse ecosystem. We look forward to witnessing more nodes join this important mission and make greater contributions to the future of the Morse community. Through the Super Node Mining Pool, we will continue to advance towards a more open, collaborative, and prosperous Morse ecosystem.

4.8.1. Global node and Prime node

3 Global Nodes are established worldwide.

At the beginning of each month, a selection is made at zero o'clock, after meeting the selection requirements , the selection algorithm is automatically sorted according to the current power value of the node, the power value of the individual community, and the added power value of the node community in the same month, and the top 3 nodes are selected as global nodes.

9 Prime Nodes established worldwide.

At the beginning of each month, a selection is made at zero o'clock, after meeting the selection requirements , the selection algorithm is automatically sorted according to the current power value of the node, the power value of the individual community, and the added power value of the node community in the same month, and the top 9 nodes are selected as prime nodes.

4.8.2. Fixed rewards for global nodes and prime nodes

The global nodes and prime nodes are the main driving force of the project, and a fixed reward will be released to them from the super node mining pool every day.

4.8.3. Performance rewards for global nodes and prime nodes

Daily gradient performance rewards are issued to nodes based on their current power value, personal community power value, and daily added power value to the node community on a daily basis.

4.8.4. Global nodes and prime nodes mining period rewards

The rules for mining period reward are the same as those for founder nodes as well as partner nodes.

4.9. Dividend mechanism

Dividend proceeds are composed of withdrawal fees, bonus fees and transaction fees, etc. 50% is credited to the dividend pool and is calculated once a month. The proceeds are shared by founder nodes, partner nodes and VIP miners (miners who burn more than 300,000 tokens in a single time without becoming founder nodes or partner nodes).

4.10. Upgrade of mining mechanism

Considering the network operation upgrade and the reasonableness of token volume circulation supply, when the destruction quantity reaches 110 million (1/3 of the total token volume), a big community upgrade proposal will be held. At that time, according to the network data and community situation, the way of mining can be adjusted and decided by DAO voting. However, if the network data and the community's will still adhere to the original mechanism of mining, the mechanism will remain unchanged, the contract will remain unchanged, and the execution will continue according to the existing mining mechanism until the last token is mined. The overall project runs in a fully DAO manner.

4.11. Hedging mechanism

➤ If a major force majeure event occurs during the development of MORSE, such as a global war, a devastating natural disaster, a devastating disruption of the global Internet network, or if humanity migrates to another planet, then the tokens not yet mined by the MORSE project will be burned at once (go into a black hole). Only the

mined tokens will remain in circulation.

➤ Morse will create a fund pool and use 50% of the withdrawal fees and any other earnings that may be generated to fix bitcoin. The value of bitcoin in the fund pool will underwrite the value of Morse tokens in the future.

4.12. Internal circulation mechanism

Morse will gradually open up and upgrade its functions, such as the upgrade of the large group function, the red packet grabbing function, the moment function, the live streaming function, the game function, the advertising function and so on. This will generate a large consumer-grade circular scenario, with all proceeds generated going to bitcoin fixing, underpinning the value of the Morse tokens.

5. Project Vision

From the very beginning, the Morse project was conceived to build a decentralized tool, community and platform, forming an open and closed-loop ecosystem and building into a new decentralized autonomous meta-universe.

Similar to WhatsApp, WeChat ecology, the accumulation of communication platform is the user, the user has a unique ID to communicate and exchange with other people on the platform, this ID can be bound to personal credit, bank account and other physical account system, so that this communication APP becomes a comprehensive entrance and form a powerful ecological platform.

5.1. Project Planning

According to the plan, it can be divided into three stages.

Primary Stage: Basic Capabilities

The primary stage is the first six months to one year of the initial launch of the project. This stage seeks to improve the basic communication capabilities and improve the block chain economic model, and gradually accumulate users and form a certain scale of users. Realize the basic application scenarios and demands.

Intermediate Stage: Platform

The intermediate stage is the platform stage.

On the basis of certain user scale and network capacity, the market has verified the basic service capacity and economy. On this basis, the support capability of building the platform is improved and the entrance of various applications is formed.

Advanced Stage: Metaverse

The advanced stage is the vision of the project, transitioning to a new meta-universe.

On the basis of having users and economies, there are communities and business activities, which naturally form the foundation of the meta-universe. On the basis of the platform, new virtualized scenarios and innovative models are built to form the Morse meta-universe.

5.2. Future application scenarios

Morse will eventually be realized as an open decentralized DAPP platform.

The platform is identified by block chain wallet ID, based on community and linked by tokens, with open interfaces to form a platform that supports a closed-loop full lifecycle application.

In theory, all kinds of existing business applications can be transformed into DAPPs to be realized in this platform to achieve decentralization.

Some typical application scenarios are listed below.

Decentralized Media

Digital content production and consumption has been the most dominant form of entertainment and consumption on the mobile Internet today. Using this platform, contractual self-publishing and consumption can be achieved.

The platform can be used as a media platform for creation and consumption, and the producers' revenue can be guaranteed in real time according to the browsing and consumption, forming a fair and transparent self-media platform.

Decentralized Finance

Cross-chain implementation of DEFI and other financial applications through wallets as a bridge.

NFT Store

Creating NFTs, or NFTing physical assets (building trust-connected entities) that can be freely purchased or sold in the store.

Virtual Social

With the establishment of metaverse scenes, scenario-based socialization of real and virtual characters can be realized.

Future communication can be more diversified and scenario-based, generating a new way of socializing, not only in the existing way of text or voice.

In the future, you can communicate with each other in a coffee shop in the metaverse.

AI Digital Human Services

Use existing AI platforms and knowledge and information to build virtual digital people. In the community or meta-universe space, provide various services that users need.

You can find teachers for learning, emotional comforters, and fellow practitioners who are omnipotent but may not be real people.

Meta-universe games

Various application mini-games can be developed based on this platform.

Morse tokens can be used as an asset anchoring and value exchange medium in the game, allowing players to participate in the game while getting the corresponding incentives or paying to get the corresponding props and rights.

In the future, it can develop metaverse VR games.

6. Team & Plan

6.1. Team



Lewis

Serial entrepreneur with over 15 years of experience building and investing in startups and leader of multiple multi-million dollar projects.



Oby

Oby is the lead designer of the MORSE architecture. He was once one of the core team members of Spyder Protocol. He has developed encrypted cloud storage and enterprise messaging systems for organizations such as Blockchain Nigeria User Group, WA Bantu Blockchain and others.



Tara

Tara has over 15 years of experience in finance operations and business strategy with a focus on fin-tech. She was CMO of International Export and Import Ltd. She is one of the main architects of the economic model.



Jonathan

Jonathan has 12 years of leadership experience in business development, strategic planning, business operations and corporate development. He has extensive experience in solving complex business problems and executing strategies.

6.2. Road Map

