NIBIRU NETWORK

ABSTRACT

Decentralized open services have gradually been proven as a viable alternative to centralized proprietary services. The advent of blockchain technology has proven the utility of distributed ledgers processing sophisticated smart contract applications and transacting valuable crypto-assets. These systems represent the early instances, where participants form a decentralized network providing an alternative to centralized systems. Nibiru Network expands on this application into various verticals, enabling not just the decentralisation transactions across assets, and economical value, but data as well. What was a tool solely used to transfer digital economical energy across space and time, will now be used for transferring other data, across space and time.

Nibiru Network is a decentralized secure network that provides an infrastructure for WEB3 applications. It is based on the Software-Defined Networking ("**SDN**") / Software Defined Virtual Network (SDVN) technology and built on the internet with a secure, open, high-speed, co-construction, and shared decentralized IP layer network. This network uses three consensus protocols – Multi Proof of Stake (MPoS), Proof of Flow (PoF), and Proof of Capacity (PoC) - to incentivize the development of the network.

Service providers contribute infrastructure resources (such as the IP layer network, storage, and computing) and various WEB 3 applications for consumers to provide services and receive rewards. This system enables consumers to pay for the corresponding services provided by other consumers, forming an economic ecosystem where users can benefit from each other's services. Nibiru Network is a layer one public blockchain that offers smart contract capabilities.

The token of Nibiru Network is NBN, with a maximum supply of 1,000,000,000. Service providers can mine for NBN, and consumers can obtain credit points by burning NBN and purchasing services in Nibiru Network's ecosystem. This system incentivizes the development of the network and ensures the circulation of the NBN token within the ecosystem.

Commented [1]: What does this mean?

Commented [2R1]: Bitcoin's value is derived from the ability to transfer economical energy over space and time

While gold is a good store of value over time, it is not good across space. Physically moving or storing a billion dollars worth of gold could come at a huge cost, but moving a billion dollars worth of BTC costs a few dollars and takes a few minutes.

This efficiency was only ever achieved through centralized means, but BTC allows it to take place in a decentralized manner.

Now, Nibiru is taking that a step further, by expanding on this. Rather than havin an ecosystem solely dedicated to the purpose of transferring economic energ over space and time, we also have the transfer of data. Not just a coin.

Table of Contents

1. INTRODUCTION

Nibiru Network represents an evolutionary step in secure, decentralized infrastructures designed to support WEB3 applications. This network leverages three consensus protocols to encourage continued development and growth, while simultaneously connecting virtual economies on the blockchain with real-world applications off-chain to create a comprehensive and seamless economic ecosystem.

One of the key strengths of the Nibiru Network is its compatibility with other blockchain-based software/technologies having the capacity to execute smart contracts, which provides developers with a convenient and intuitive way to migrate or deploy their projects from the other blockchains to Nibiru. By offering this level of compatibility and flexibility, Nibiru Network has the potential of becoming a key player in the blockchain landscape, empowering developers to create decentralized applications and driving the evolution of the entire blockchain industry.

2. ABBREVIATIONS & DEFINITIONS

2.1 DApps: Decentralized Applications

Decentralized applications, also known as DApps, are software applications that run on a decentralized network of computers, rather than a centralized server or infrastructure. In other words, they operate on a blockchain network, where transactions are recorded and validated across a distributed network of nodes, without the need for a central authority.

DApps typically have several defining features, such as being open-source, transparent, and permissionless. They allow for direct interaction between users, without the need for intermediaries or middlemen, and often use digital tokens or cryptocurrencies as a means of exchange.

2.2 EVM: Ethereum Virtual Machine

The Ethereum Virtual Machine (EVM) is a runtime environment for executing smart contracts in the Ethereum blockchain. It is a key component of the Ethereum platform and allows developers to write and deploy decentralized applications (DApps) on the Ethereum network.

2.3 IPFS: InterPlanetary File System

The InterPlanetary File System (IPFS) is a protocol and network designed to create a decentralized and distributed file system. It was created to address some of the limitations of the traditional client-server model of file sharing, such as issues with centralization, reliability, and speed.

2.4 MPoS: Modified Proof of Stake

Modified Proof of Stake (MPoS) is a layer one consensus algorithm used in some blockchain networks that is based on the original Proof of Stake (PoS) consensus algorithm, but with modifications to address certain issues or limitations.

One example of an MPoS modification is the use of time-locked staking. This involves requiring validators to lock up their cryptocurrency for a certain period of time, during which they cannot withdraw or transfer it. This can help prevent validators from withdrawing their stake after they have been selected to validate transactions, which could otherwise disrupt the network's consensus mechanism.

2.5 PoC: Proof of Capacity

Proof of Capacity (PoC) is a layer two consensus mechanism used in Nibiru Network~~some blockchain networks~~ to validate valid storage capcity ~~transactions~~ and create new blocks. ~~It is a variation of Proof of Work (PoW) and was introduced to address some of the energy consumption issues associated with PoW.~~

2.6 PoF: Proof of Flow

Proof of Flow (PoF) is a layer two consensus mechanism designed for Nibiru Network ~~blockchain networks~~ \to ~~that rely on the exchange of data or value between different parties. PoF is focused on~~ validate~~ein~~g the flow of assets and data traffic through a network. ~~rather than the computational effort used in PoW or the storage capacity used in PoC~~.

2.7 PoS: Proof of Stake

Proof of Stake (PoS) is a consensus mechanism used in blockchain networks to validate transactions and add new blocks to the blockchain. In PoS, validators are selected based on the number of cryptocurrency tokens they hold and are willing to "stake" as collateral.

2.8 PoV: Proof of Verification

Proof of Verification (PoV) is a consensus mechanism that aims to address some of the limitations of existing blockchain consensus algorithms such as Proof of Work (PoW) and Proof of Stake (PoS).

In PoV, nodes in the network are incentivized to verify the validity of transactions rather than mining new blocks. Nodes must perform a series of verifications to validate transactions and add them to the blockchain. These verifications include checking the authenticity of digital signatures, verifying the transaction balances, and ensuring that the transaction is not double spending.

2.9 SDN: Software-Defined Networking

SDN (Software-Defined Networking) is an architecture that separates the control plane from the data plane in a network.

2.10 SDVN: Software Defined Virtual Network

SDVN (Software-Defined Virtual Network) is a network virtualization technology that creates virtual networks on top of physical networks. It enables the creation of multiple virtual networks that are isolated from each other, each with its own set of network policies and resources. SDVN can help simplify network management, improve security, and enable more efficient use of network resources.

3. OVERVIEW OF THE NBN TOKEN & NIBIRU NETWORK

3.1 What is Nibiru Network

Nibiru Network is a decentralized platform that connects on-chain and off-chain worlds, allowing the conversion of real-world applications into digital tokens on the blockchain. Nibiru facilitates this through the use of IP layer network traffic billing consensus PoF and effective storage consensus PoC provided SDN/SDVN technology.

The platform relies on a collaborative relationship between consumers and service providers, where consumers pay fees for using services, while service providers receive rewards for their contributions to the network. Service providers are responsible for maintaining system stability at the blockchain layer, IP network service layer, storage service layer, and WEB3 application layer, and providing various services in the real-world application market.

The platform also has a closed-loop economy where service providers can earn value in return for their services, ensuring the continued growth and success of the Nibiru ecosystem. Token owners focus on price fluctuations, one of the driving forces for the rise of NBN value. The platform uses a credit exchange system where the value of the credit is constant and can only be converted from NBN, whose value is regularly provided by multiple oracle machines.

The mining process in Nibiru Network involves Service providers such as block generation and verification service providers, IP layer network service providers, storage service providers, and application service providers. A real application mining case, such as video bloggers, illustrates how consumers buy NBN, convert it to credit, pay for services using credit, and how valid storage or valid traffic generates NBN tokens as rewards for service providers through the PoC and PoF protocols.

○

4. NIBIRU NETWORK BENEFITS

4.1 Share. Earn:

In the Nibiru ecosystem, both consumers and service providers play a critical role in enriching the overall application ecosystem. Consumers pay fees for using any service, including bandwidth, storage, and applications. On the other hand, service providers receive rewards for their contribution to the network. This collaboration between consumers and service providers creates a sustainable and prosperous ecosystem.

4.2 Connecting “on-chain” and “off-chain”:

Nibiru facilitates the connection between the "on-chain" and "off-chain" worlds through the use of IP layer network traffic billing consensus PoF and effective storage consensus PoC provided by SDN/SDVN technology. By utilizing this technology, the business value of real-world applications can be converted into digital tokens on the blockchain, allowing more investors and consumers to directly participate in the blockchain digital economy in a simple, low-cost, and convenient way.

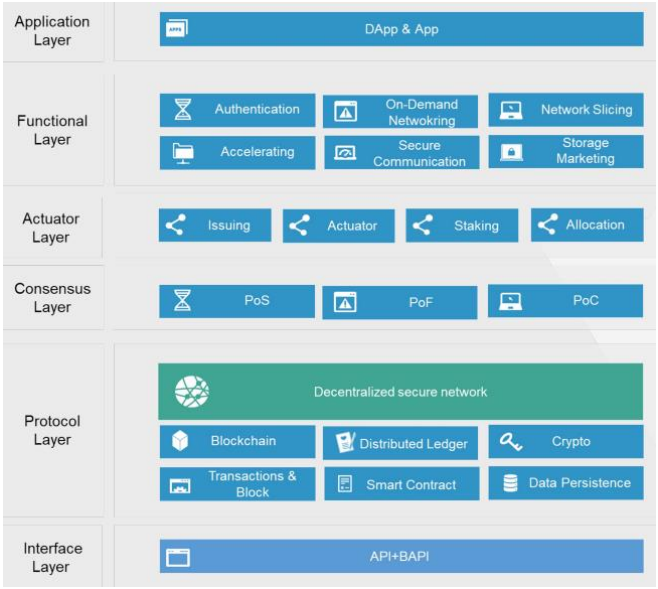
4.3 Secure and Decentralized:

Through the use of fully distributed encrypted IP layer networks, all users, including service providers and consumers, can securely communicate with each other in a point-to-point and high-speed manner. This decentralized approach ensures the security and privacy of all users on the platform.

4.4 Closed-loop economy:

Nibiru's decentralized and secure features enable users to choose from a wide range of services, including both on-chain and off-chain offerings. Service providers can earn value in return for their services, creating a closed-loop economy between providers and consumers. This economic model promotes the continued growth and success of the Nibiru ecosystem.

4.5 Nibiru Network Architecture



5. ROLES

Parties	Roles
Investor	Provides funds, technology, market and other resources for projects and application developers.
service providers	service providers consist of block generation and verification service providers (MPoS, Pov merged in MPoS), IP layer network service providers (PoF), storage service service providers (PoC) and application service providers (mapped to PoC and PoF). service providers are responsible for maintaining system stability at the blockchain layer, IP network service layer, storage service layer, and web3 application layer, and providing various services in the real-world application market.
Consumer	Pays to use various services in the Nibiru network.
Application Developer	Application developers are also service providers, providing various real applications based on the Nibiru project, whose proof of work is mapped to PoF or PoC consensus protocol.

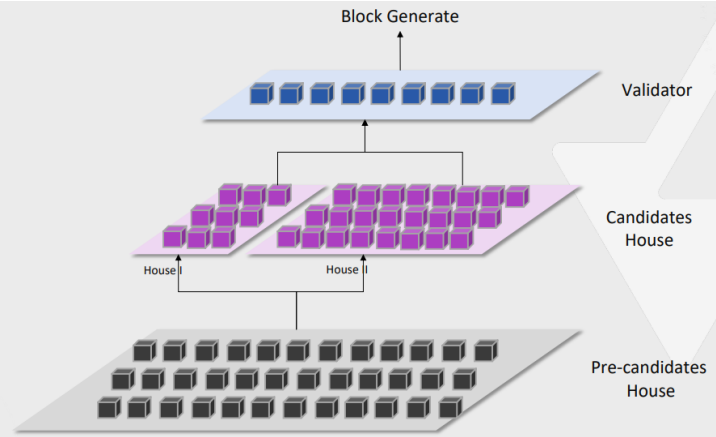
Token Owner	Focuses on price fluctuations, one of the driving forces for the rise of NBN value.

6. FEATURES AND BENEFITS OF THE MPOS CONSENSUS MECHANISM

6.1 MPoS Election and Features of MPoS

The MPoS (Modified Proof of Stake) consensus mechanism is an alternative to the PoS protocol. This system is designed to address the scalability and security issues faced in other networks, while also providing faster transaction processing times and lower energy consumption.

One of the key features of MPoS is its dual-chamber model, which divides the candidate nodes into two separate pools with different proportions of candidates. The upper and lower house system ensures that nodes with a larger number of pledges have more opportunities to produce blocks, while smaller nodes also have a chance to participate in the block production process, thereby avoiding class solidification and consensus rigidity. In other words, in each round of witness node election, a corresponding number of nodes are selected according to the equity algorithm to give the right to produce blocks (that is, verification node), and at the same time combined with the benefit algorithm to ensure that each participant can get the opportunity to produce a block.



The MPoS consensus mechanism also offers faster block confirmation times. In the MPoS network, a block is solidified immediately upon its production, and then confirmed by 21 verifiers within 10 seconds, resulting in faster convergence speeds and reduced rollback risks.

Moreover, the MPoS network has a stable distribution of block generation time, producing a block every 10 seconds with an average waiting time of 6 seconds for transaction processing.

This ensures that the network maintains optimal performance and transaction processing speeds.

The MPoS verification process as used by Nibiru, is also expanded beyond transaction verification, as the verifier is responsible for verifying participants in the PoC and PoF protocols, with additional responsibilities and benefits compared to traditional PoS. This expanded scope of verification ensures the integrity and security of the network.

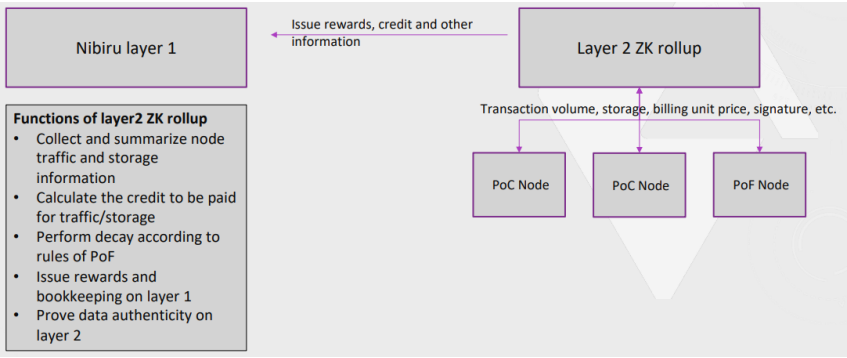
Another key advantage of MPoS is its low participation threshold. The 100 NBN pledge entry threshold is far lower than other networks that adopt PoS consensus in the industry. This allows anyone to participate in the network as a verifier, ensuring decentralized participation and a more secure network.

Finally, the MPoS network has a built-in mechanism that allows for faster detection of issues with validator participation in a single slot. This means that potential problems with the network can be identified and addressed quickly, ensuring optimal network performance and security.

Overall, the MPoS consensus mechanism offers a range of features and benefits that make it an industry-recognized optimal solution for blockchain networks. Its fairer dual-chamber system, faster block confirmation times, stable block generation times, expanded verification process, low participation threshold, and faster problem detection makes it a highly secure, efficient, and scalable blockchain solution.

6.2 Protocols of PoF and PoC based on layer 2 ZK rollup

The layer 2 ZK rollup scheme is adopted to provide workload aggregation, credit payment, and unified reward distribution for nodes participating in the PoC and PoF protocols.



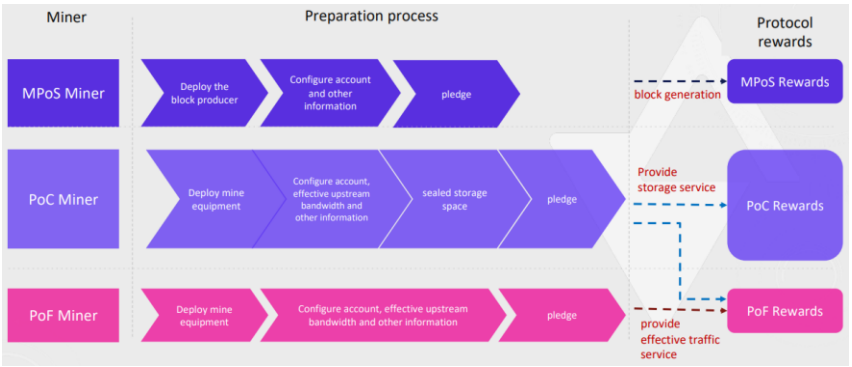
6.3 Application Range

- *Web 3:* Chain + distributed network + distributed storage + distributed computing to support Web 3 applications
- *IP layer network:* Private networking, encrypted communication
- *Data:* Store, trade, and share
- *Calculation:* Edge computing, edge-cloud collaborative computing, distributed computing
- *Payment:* The network coin, NBNs are one-way exchanged for credits according to the market price (coin destruction during the exchange), and credits are used to purchase products and services

NBN TWAP Description

Multiple oracle machines regularly provide the price of NBN, and once enough new price data is gathered, the blockchain calculates a new NBN/$USD price that remains valid until more valid data is submitted, prompting a new price correction. The NBN TWAP update interval is every 60 blocks or about 10 minutes. If the number of oracle machines from the source of the quotation reaches (n/2)+1 within 24 hours, the blockchain will use the remaining price to calculate the average value after removing the highest and lowest values, and use it as the TWAP for the next credit exchange for NBN until new price update. A valid price submission is anything that was submitted within the last 25 hours but is older than 1 hour, allowing the blockchain to calculate a trailing 24-hour median while also having a buffer against outlier price inputs in the most recent 60 minutes.

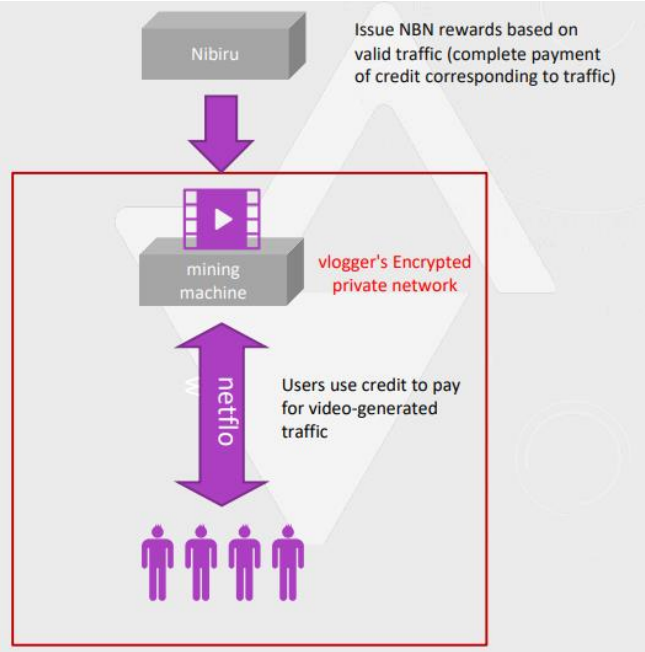
6.4 Mining Methods



7. PRACTICAL EXAMPLE

7.1 Examples of Real Application Mining Cases – Video Bloggers (Real Application service providers)

- Video bloggers or Vloggers (service providers) have the capability to create their own private network on Nibiru and deploy video applications, such as video apps, on the mining machines within the network. They have the ability to determine their own traffic prices, provided they do not exceed the network benchmark price limits.
- Consumers join vlogger's private network.
- Consumers watch the video files in the blogger's mining machine online, and pay the corresponding credit for the network data traffic generated by the video stream (complete the process of mapping specific applications to valid traffic).
- The valid traffic paid in credit is minted as NBN and rewarded to video bloggers (service providers) through the PoF protocol.



8. CONSUMER ACCESS TO MINER SERVICES AND THE MINTING PROCESS

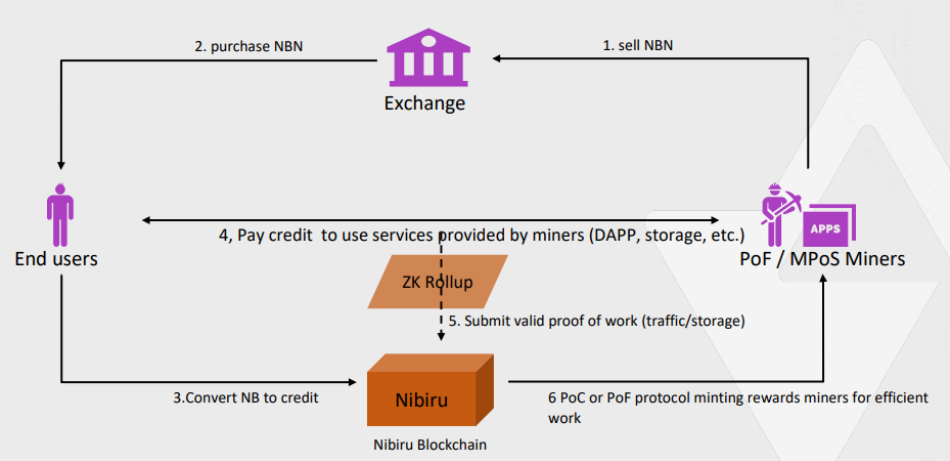


Illustration:

•Consumers buy NBN on exchanges

•Consumers convert NBN token burns to credit on Nibiru Chain

•Consumers payc credit to use various services hosted on the miner, such as video, storage, etc. These services generate valid storage or valid traffic

•The storage space service will mint NBN on the PoC protocol to reward miners; other DAPP applications will generate effective traffic and rewards NBN to miners by PoF Protocol

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9. TECHNICAL SPECIFICATIONS OF NIBIRU NETWORK'S ECONOMIC MODEL

9.1 What is a Valid Proof of Services - Valid Traffic Flow

New NBN tokens can be minted through the on-chain protocol traffic or storage corresponding to the credit purchased with NBN.

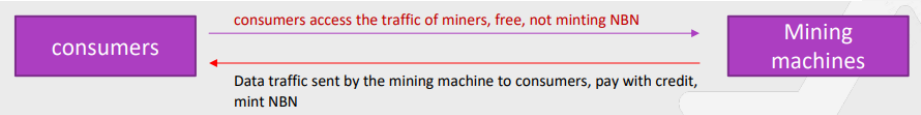


Illustration:

1. In the Nibiru network, the upstream traffic generated by the service providers needs to be paid in credit that has been purchased with NBN. This paid traffic is called valid traffic.
2. Valid traffic is signed and approved by both "consumers" and "service providers".
3. Valid traffic mints new NBN via the PoF protocol.
4. The daily upper limit of valid traffic that a miner can mint NBN is determined by the effective upstream bandwidth at the time of staking. The “traffic” that exceeds the theoretical maximum daily effective staking bandwidth is not counted as valid proof-of-work traffic, resulting in no NBN being minted.
5. The price per GB of valid traffic is generated by the Nibiru network based on the Nibiru Network oracle, allowing service providers to adjust the price up and down within the range allowed by the protocol, and the traffic price adjusted up and down will be reflected in the final amount of minted NBN.

9.2 What is a Valid Proof of Services - Valid Storage

Only the traffic or storage corresponding to the credit purchased with NBN has been paid can the NBN token be minted through the on-chain protocol.

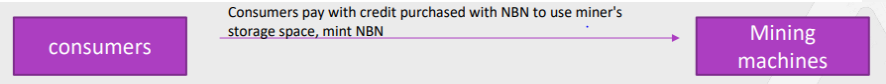
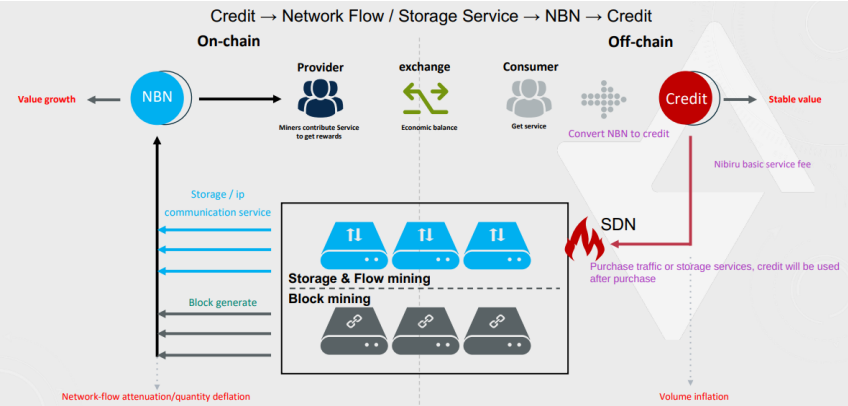


Illustration:

1. In the Nibiru network, consumers use NBN to purchase to pay tfor the storage space (storage + duration), which is called valid proof of work-valid storage.
2. The use of valid storage space is affected by a smart contract signed by both "consumers" and "service providers". Consumers pay the price, service providers pledge to ensure service quality.
3. The valid storage can mint NBN via the PoC protocol.
4. The NBN that service providers can mint through the PoC protocol is limited by the total amount of sealed space.
5. The credit price per GB of storage space is generated by the Nibiru network oracle, allowing service providers to adjust the price up and down within the range allowed by the protocol. The adjusted storage price will be reflected in the final amount of minted NBN.

9.3 Closed Loop Economic Model



9.4 Types of Nodes

- *Validator Node:*

Description: This node participates in MPoS and POV protocols to validate transactions on the network.
Rewards: Receives MPoS & PoV rewards for its participation.
Production Limitations: Production is restricted by the node's rights, penalty points, and verification times.

- *Storage Node:*

Description: This node participates in PoC and PoF protocols to store and retrieve data on the network.
Rewards: Receives PoC & PoF rewards for its participation.

Production Limitations: Production is constrained by the storage device's capacity and bandwidth.

- *Traffic Node:*

Description: This node participates in PoF protocol to manage and direct network traffic.
Rewards: Receives PoF rewards for its participation.
Production Limitations: Production is limited by the node's bandwidth capacity.

10. ACCOUNT TYPES AND STAKING/LOCKING RULES IN BLOCKCHAIN NETWORKS

10.1 MPoS Validator Account Type

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Name	Identification method	Spec
Service Provider address	The address saved in the MPoS node configuration file.	Signature for block verification.
Management address	The first address to do MPoS pledge for the miner address.	Binds and modifies node reward address. When there is no reward address, the management address defaults to the node reward address. Exit MPoS pledge (executable after 1 year, all pledges will be returned to the wallet after exit, and the node will lose MPoS power). Set the rate (n% is obtained by the node operator when the block is produced, and the reward is sent to the node reward address, which is set by the management address).
Node reward address	The reward address bound to the MPoS miner.	It is used to receive the rewards of the MPoS node's block and GAS fee, and only the part of the node's full reward * rate will be charged.

10.2 MPoS Delegator Account Type

Name	Identification Method	Spec	Rules
Delegation address	When a user pledges to a MPoS node, the source address of the pledge is the delegation address	Staking and unstaking a MPoS node Get the pledge income (all rewards of the MPoS node * (1-rate) * the proportion of the delegated address in the pledge amount of the MPoS node).	Only one delegation address can be pledged to one MPoS node. If you want to pledge other MPoS nodes, you need to use a new delegation address.

10.3 PoF, PoC Node and General Account Types

The different addresses and accounts are denoted below.

For the **service provider address,** the address is saved in the PoF / PoC node configuration file. For space and time verification. Commitment for traffic/storage proof data. For Storage sealing.

The **management addresses**, being the first address to do PoF/PoC pledge for the service provider address.

The management addresses bind and modify node reward addresses, modify nodes' bandwidth, modify the unit price of traffic and storage, and when there is no reward address, the management address defaults to the node reward address. Management addresses also execute Stored singed and terminated contracts. Finally, they exit PoF / PoC pledge (executable after 1 year, all pledges will be returned to the original way after exit, and the node will lose PoF / PoC power).

The **node reward address** is bound to the PoF / PoC service providers. As referred above, these addresses receive PoF/PoC incentives and service rewards.

The general address is all addresses on the blockchain. Their function is to transfer, call contract. A special type of address such as a mining machine address and income address.

10.4 Staking and Locking

Description	Spec
Pledge Freeze Period (MPoS/PoF/PoC)	One year
Lock release rules (all rewards and released pledges)	Lock release rules (all rewards and released pledges) 30-day lock-up + 365 antenna linear release.
Stake Freeze Period of delegator	7 days

11. TECHNICAL SPECIFICATION AND DESIGN OF PROTOCOLS AND NIBIRU NETWORK

11.1 MPoS Protocol

11.1.1 Minting Design

MPoS is a variation of the Proof of Stake (PoS) protocol that is designed to improve its fairness, speed, and security. It uses a dual-chamber system where a set of nodes are elected as validators according to an equity algorithm and a benefit algorithm. The validators are responsible for verifying transactions, PoC, and PoF protocol participants.

The MPoS protocol has a total token circulation of 120,000,000. The first year's MPoS mint volume is 1% of the total mint volume of the overall agreement, and it decreases by 15% annually. The lower limit of the coinage as a percentage of the protocol is 0.2316%, and it does not change after the 10th year. The MPoS reward distribution window is once every 8640 blocks, which is equivalent to 24 hours in reality.

11.1.2 MPoS Protocol Minting Design (Formula)

Name	**Spec**
C. PoS	*The total amount of MPoS tokens, fixed value : 120,000,000*
n	*Year of issue, starting with 1, where 1 is the first year*
C. PoS $_n$	MPoS token output in the nth year
R. PoS$_1$	The coefficient of the total issuance in the first year is 1%
y. PoS	Decrease rate every year for the first 10 years is 15%
R. PoS$_{10}$	The issuance ratio after the 10th year is 0.2316%
T. PoS $_n$	Cumulative output in the nth year
Reward. block $_n$	MPoS rewards per block in the nth year

Calculation of the number of coins minted by MPoS in the current year:

$$C.PoS_n = \begin{cases} C.PoS \times R.PoS_1 \times (1-\gamma.PoS)^{n-1} & 1 \le n \le 10 \\ C.PoS \times R.PoS_{10} & n > 10 \end{cases}$$

MPoS cumulative output calculation:

$$T.PoS_n = \begin{cases} C.PoS \times R.PoS_1 \times \dfrac{(1-\gamma.PoS)^n - 1}{(1-\gamma.PoS) - 1} & 1 \le n \le 10 \\ C.PoS \times R.PoS_1 \times \dfrac{(1-\gamma.PoS)^n - 1}{(1-\gamma.PoS) - 1} + C.PoS \times R.PoS_{10} \times (n-10) & n > 10 \end{cases}$$

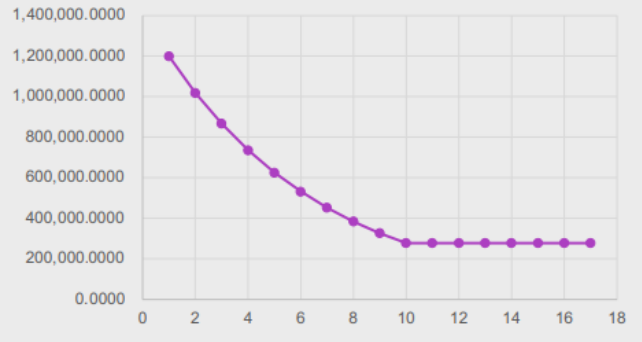
Calculation of MPoS rewards per block in the current year:

$$Reward.block_n = C.PoS_n \div 3153600$$

11.1.3 MPoS Protocol Minting Design (Graphic Illustration)

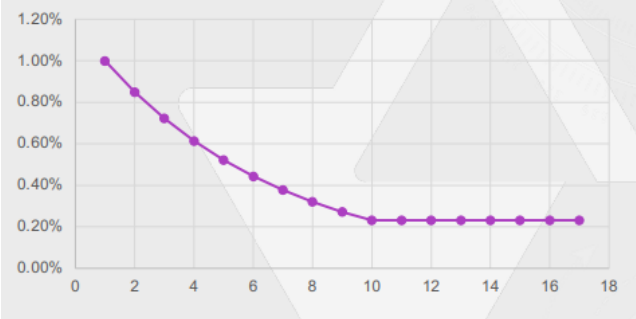
MPoS Annual Minting Volume

The annual minting volume of MPoS decreases, and after 10 years, the annual output remains the same as can be seen in the graph.



The annual output of MPoS accounts for the coefficient of the total

As can be seen in the below graph, in the first year of MPoS, the number of coins minted accounts for 1% of the total and then decreases by 15%. After reaching the 10th year, the annual output accounts for the same coefficient of the total.

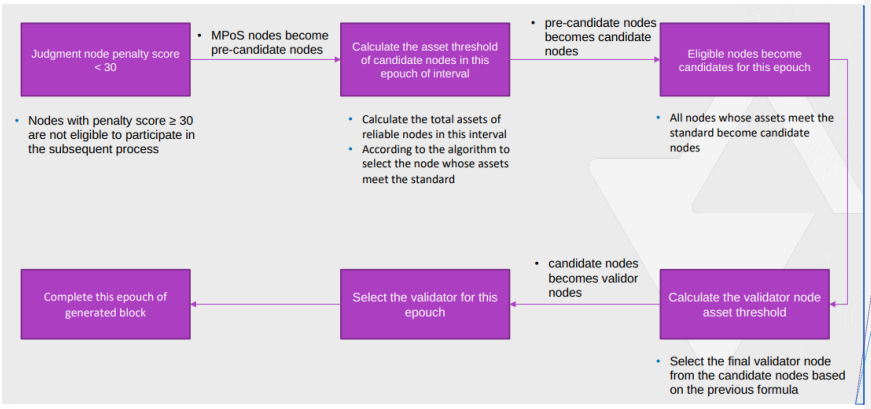


11.1.4 MPoS Node Definition and Block Times

- Pre-Candidate Node: There is no limit to the number of nodes that can participate in the Pre-Candidate House, as long as they pledge the minimum amount of 100 NBN. These nodes are eligible for the pre-candidate status.
- Candidate Node: During the first interval (Genesis Interval), the Genesis Node enters the Candidate Node status. After the Genesis Interval, nodes with less than 30 penalty points move to the Candidate Node interval 2.
- Validator Node: A maximum of 21 nodes have the right to generate blocks, producing 10 blocks in a block epoch. The network has 9 seats in zone 1 and 12 seats in zone 2, with a block slot of 10 seconds and a block ePoCh of 2100 seconds. There are 210 blocks per epoch. Verification nodes are selected for the next cycle based on their equity, penalty points, and the number of generated blocks.

Note: The comprehensive selection of verification nodes for the next cycle is based on equity, penalty points, and the number of blocks produced.

11.1.5 Validator Selection Process



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Commented [5]: Can we color-code this chart based on "pre-candidate", "candidate" and "validator" stages? Als a spelling error in last box (epouch).

Commented [6R5]: Note to the branding team for this @alejandra@lunapr.io

11.1.6 Rules for Pre-Candidate Nodes to become Candidate Nodes

To become a candidate node, pre-candidate nodes must follow specific rules. During each campaign window, MPoS nodes with fewer than 30 penalty points are ranked by the chain. Nodes that meet the asset threshold will be considered as candidates. The ranking algorithm involves removing the highest and lowest MPoS node asset and calculating the average value. The resulting average, multiplied by a percentage (x%), sets the asset threshold number for the pre-candidate node.

11.1.7 Calculation Formula for a Candidate Node to become a Verification Node

In each campaign window, the chain obtains the serial number of each candidate node based on the algorithm, and according to the node serial number, the top n names are selected as verification nodes from large to small (n=the number of validator nodes that can be entered in the interval, n is 9 in interval 1, and n is 12 in interval 2).

Name	spec
No_{node}	Candidate node's order number
α_{node}	The number of times a node has been elected as a validator in 7 days
η	Assets of candidate nodes
$\sum \eta$	The sum of the assets of all nodes in the interval
Γ	The penalty score of the candidate node

$$No_{node} = \sqrt{\frac{1}{\alpha_{node}+1}} \times \frac{\eta}{\sum \eta} \times (100 - \Gamma)$$

Illustration:

- When the total number of nodes in a certain interval is less than the number of validator nodes that should be taken in this interval, the first few nodes in the interval will be selected to complete the tasks.
- Both intervals enforce the same rules.
- When the assets of some nodes in the interval are lower than the "real-time calculation value of the campaign", these nodes will never be successfully elected as validators.
- The calculation formula is cleared every 7 days, that is, the "Number of Validated Nodes Elected" is cleared every 7 days.

11.1.8 MPoS Validators and Delegators

The MPoS protocol plays a crucial role in Nervos Network's consensus mechanism. It enables the Delegator to delegate NBN to a verification address and receive a share of the Validator's block reward. The Validator, on the other hand, is responsible for operating the verification node, generating blocks, and distributing the block reward to all delegators after deducting the handling fee. To participate in MPoS delegation and verification, an individual must stake the specified amount of NBN and become a validator. Upon withdrawal, the

validator will receive their full pledge back. The validator has the ability to set the fee percentage, and the remaining verification rewards will be distributed among the delegators. Any address can delegate NBN to any validator, but only one address can delegate NBN to one verifier. The entrusted NBN is locked up for a period of 7 days and can be withdrawn after the lock-up period expires.

11.1.9 Reward Distribution Rules

Name	Spec
$Reward_v$	Validator node's reward per block.
$Reward_{block}$	Reward per block
Fee_v	Node preset rate
$Reward_d$	Delegator's reward per block
S_d	Delegator's pledge amount
$\sum S.D_{amount}$	Total stake of validator nodes

The validator node pre-sets its own rate ratio. When the reward is issued, this part of the reward will be issued to the reward address bound to the node:

$$Reward_v = Reward_{block} \times Fee_v$$

The remaining block rewards will be distributed evenly among all delegator addresses according to the proportion of the total staked amount.

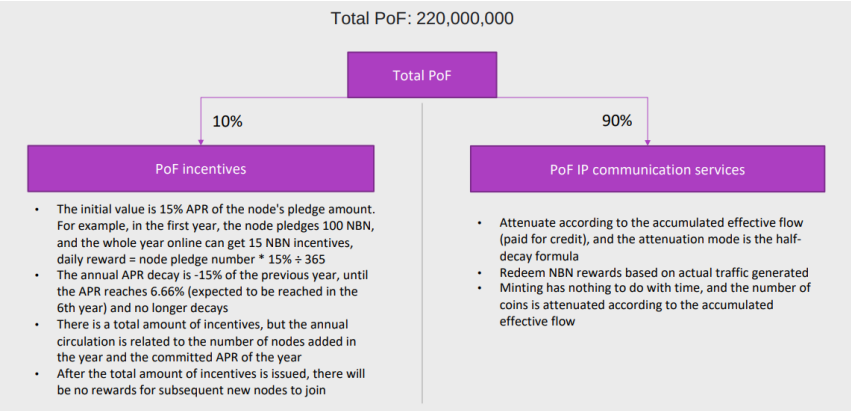
$$Reward_d = Reward_{block} \times (1 - Fee_v) \times \frac{S_d}{\sum S.D_{amount}}$$

11.1.10 MPoS Node Penalty

MPoS nodes are equipped with a penalty point mechanism that adds a certain amount of penalty points if the verification node misses blocks in an ePoCh. If the penalty points exceed 30, the node loses the chance to become a validator. Failure to pay the penalty points within 30 days results in automatic withdrawal from the MPoS protocol, and the admin and reward addresses' pledge amounts will be burned in full. MPoS nodes allow users to pay NBN to eliminate penalty points, but the NBN used for this purpose will be destroyed.

11.2 POF PROTOCOL

11.2.1 Number of POF



11.2.2 PoF and PoC Protocol – Incentive Model

The proposed incentive protocol for both the PoF and PoC protocols is outlined below. Each protocol will have a total incentive pool of 22,000,000 NBN. In the first year, 15% of the pool will be allocated, with the percentage decreasing by 15% each subsequent year. After the 6th year, the incentive amount will be determined based on the number of pledges and APR/365 in the current year, with daily issuance for as long as the node remains active. Early withdrawals will forfeit future incentive rewards. Nodes that join after the total amount of incentives has been issued will not receive any rewards. The reward distribution window updates every 8640 blocks, or approximately every 24 hours. The incentive formula is illustrated in a graph that shows the proposed changes over the years.

11.2.3 PoF Protocol – Incentive (Formula)

Role	Spec
i. PoF	PoF incentive part of the total amount of tokens, constant value: 22,000,000
n	year, starting at 1
Ri. PoF_{1st}	The incentive APR of PoF in the first year is 15%
Ri. PoF_n	Incentive APR for PoF in nth year
yi. PoF	Decrease rate every year for the first 6 years, 15%
Ri. PoF_{6th}	The APR of the PoF incentive part after the 6th year is 6.66%
iReward. PoF_n	The number of PoF rewards that PoF nodes can get in the nth year

$u.\ sPoF_{amount}$	The number of nodes staked on the PoF protocol

Annual APR calculation for PoF incentive part:

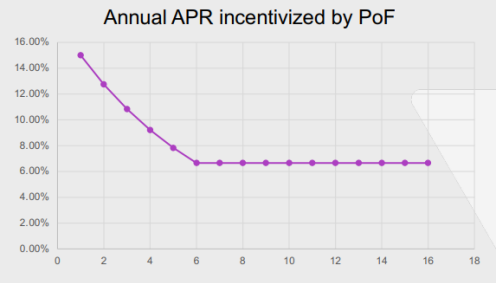
$$Ri.PoF_n = \begin{cases} Ri.PoF_{1st} \times (1 - \gamma i.PoF\ )^{n-1} & 1 \le n \le 6 \\ Ri.PoF_{6th} & n > 6 \end{cases}$$

Calculation of the actual rewards PoF nodes get each year:

$$iReward.PoF_n = \begin{cases} u.sPoF_{amount} \times Ri.PoF_n & 1 \le n \le 6 \\ u.sPoF_{amount} \times Ri.PoF_{6th} & n > 6 \end{cases}$$

11.2.4 PoF Protocol – Incentive (Graphic Illustration)

As can be seen in the graph below, the APR of the incentive is initially 15% and then decreases by 15% every year. After the sixth year, the APR will no longer decrease.



11.2.5 PoF Protocol - IP Communication Service

Role	Spec
Total amount of PoF IP communication service rewards	198,000,000
Decay model	Half-life model
Decay Period (EB)	80

Attenuation by	Attenuation based on accumulated effective flow
Reward distribution window	Once every 8640 blocks (24 hours in real time)

11.2.6 PoF Protocol - IP Communication Service (Formula)

Role	Spec
e. PoF	The total amount of PoF IP communication service tokens, fixed value: 198,000,000.
n	nth EB, starting from 1, 1 means 1EB.
C. PoF$_n$	PoF token output in the nth EB.
Ye. PoF	Decrease ratio, fixed value: 0.5.
∅. PoF	PoF decay period, fixed value: 80 EB
T e. PoF$_n$	Cumulative output of PoF IP communication services in the nth EB.

Calculation of the total amount of PoF IP communication service issuance of the Nth EB:

$$Te.PoF_n = e.PoF \times (1 - \gamma e.PoF^{\frac{n}{\emptyset.PoF}})$$

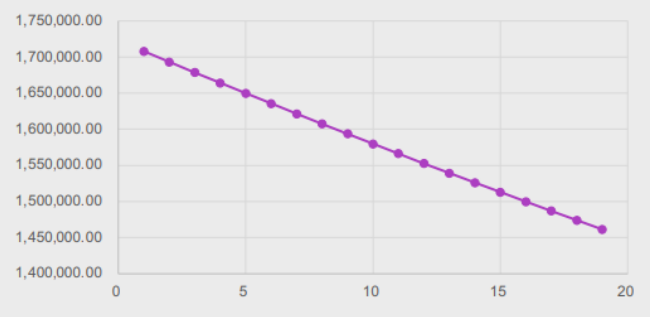
Yield calculation of PoF IP communication service in the Nth EB:

$$C.PoF_n = e.PoF \times \left\{\left(1 - \gamma e.PoF^{\frac{n}{\emptyset.PoF}}\right) - \left(1 - \gamma e.PoF^{\frac{n-1}{\emptyset.PoF}}\right)\right\}$$

11.2.7 PoF Protocol - IP Communication Service (Chart Illustration)

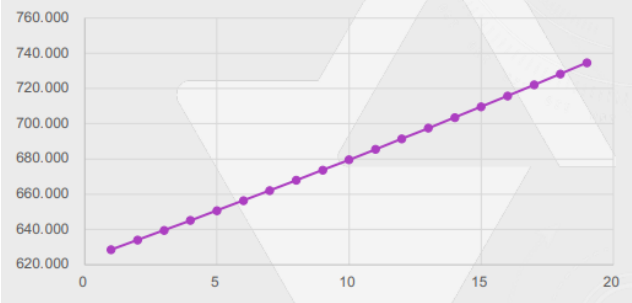
PoF minted per EB

Each time the accumulated effective traffic reaches 1 EB, the total number of NBN issued in the EB will decrease:



Exchange ratio between NBN and GB

Every time the accumulated valid traffic reaches 1 EB, the GB required to exchange 1 NBN within the EB increases:



11.2.8 PoF Protocol - IP Communication Service (Formula 2)

Role	Spec
F	Effective traffic, i.e. traffic that paid for with credit.
$Re.\ PoF_n$	Effective traffic and NBN conversion ratio in the nth decay period.
$\acute{\Lambda}_{pof}$	Traffic Pricing Weighted Value
$\kappa.\ f_{pof}$	PoF flow adjustment factor
$f\ Reward.\ PoF_n$	IP communication services Rewards for PoF Nodes in the nth decay period

PoF node IP communication services reward calculation:

$$fReward.PoF_n = \frac{F}{Re.PoF_n} \times \lambda_{pof} \times \kappa . f_{pof}$$

Rules:

- PoF nodes can only obtain incentives and ip communication services rewards under the PoF protocol.
- The traffic reward of PoF nodes must be paid traffic, that is, the credit burned.
- PoF nodes need to set the traffic unit price (for PoF protocol).

11.2.9 Bandwidth and Storage Scaling Coefficient

The PoC and PoF protocols involve different roles and coefficients for participating nodes. The Bandwidth Pledge Coefficient sets the amount of pledge required when a node participates in both PoC and PoF protocols, with a larger NBN pledge required for higher bandwidth. Meanwhile, the Bandwidth Reward Coefficient is used to calculate rewards for participating in the PoC protocol, with the reward amplification factor increasing with the same bandwidth. The Storage Reward Coefficient is used to determine the rewards that PoC nodes receive for providing effective storage services and IP communication services.

11.2.10 PoF Node Pledge Calculation

role	spec
$\varepsilon . br_w$	nMbps bandwidth reward factor
n	Mbps
$\varphi_{sr.n}$	Bandwidth reward weighted value of n Mpbs
$\varepsilon . br_a$	Bandwidth reward adjustment factor
$u.sPoF_{amount}$	The number of PoF nodes pledged
$s.PoF_y$	1Mbpspledge NBN number in yth year
$T.PoF$	Cumulative minting amount of PoF
$\sum BW$	Total network bandwidth
Δ_{pof}	1Mbps pledge number, constant
y	year

1Mbps pledged NBN amount

$$s.PoF_y = \begin{cases} \Delta_{pof} & y = 1 \\ min\left(T.PoF \times \frac{1}{\sum BW}, \ \Delta\right) & y > 1 \end{cases}$$

- In the first year, *1Mbps Pledge NBN* is set to constant

- Starting from the second year, formula calculation is enabled. If the calculated value of the formula is less than the set constant, the calculated value shall prevail; if the calculated value of the formula is greater than or equal to the set constant, the constant shall prevail.

11.2.11 PoF Node Pledge Number Calculation

PoF Node Pledge Number Calculation

$$u.sPoF_{amount} = s.PoF_y \times n$$

Bandwidth Pledge Weighting Value

$$\tau_{br.n} = log_{10}\, n$$

Bandwidth Reward Weighting Value

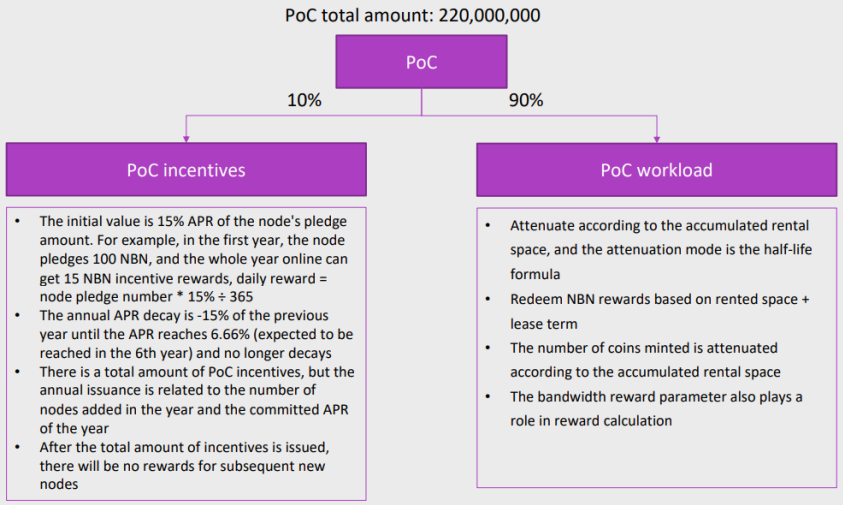
$$\varphi_{sr.n} = \tau_{br.n} \times \varepsilon.br_w + \varepsilon.br_a$$

11.2.12 PoF Node Verification and Penalty

The verification and penalty rules for PoF nodes are as follows. Verification challenges for bandwidth will be launched daily, and PoF nodes must accept and pass the verification to receive rewards. If a PoF node fails to pass the verification, no reward will be issued for that day, including both incentives and work rewards.
If a PoF node continuously fails the bandwidth verification for 30 consecutive days, the node will be forced to quit and lose the PoF mining right. Additionally, the pledged NBN and all locked rewards of the PoF node will be destroyed. If a node wishes to participate in PoF mining again, it must re-stake and start from the beginning. These penalty measures aim to ensure that nodes maintain the required level of bandwidth and incentivize them to continuously provide high-quality services.

11.3 POC PROTOCOL AND INCENTIVE STRUCTURE

11.3.1 PoC Protocol Minting Design



11.3.2 PoC Protocol – Incentives (Formula)

Role	Spec
i. PoC	`PoC incentive part of the total amount of tokens, fixed value : 22,000,000`
n	year, starting at 1
Ri. PoC$_{1st}$	The PoC incentive APR for the first year is 15%
Ri. PoC$_n$	The nth year PoC incentivizes APR
Yi. PoC	Decrease rate every year for the first 6 years, 15%
Ri. PoC$_{6th}$	The APR of the PoC incentive part after the 6th year is 6.66%
iReward. PoC$_n$	The number of PoC incentive rewards that PoC nodes can obtain in the nth year
u. sPoC$_{amount}$	The number of nodes pledged on the PoC protocol (only the corresponding pledge amount of sealed storage)

Annual APR Calculation for PoC Incentive Part:

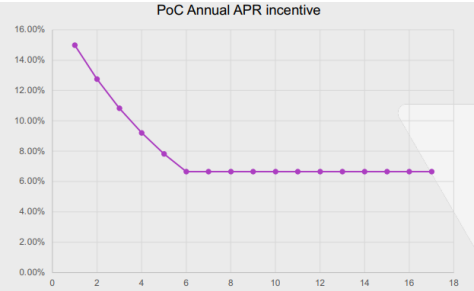
$$Ri.PoC_n = \begin{cases} Ri.PoC_{1st} \times (1 - \gamma i.PoC)^{n-1} & 1 \le n \le 6 \\ Ri.PoC_{6th} & n > 6 \end{cases}$$

Calculation of the actual rewards that PoC nodes get each year:

$$iReward.PoC_n = \begin{cases} u.sPoC_{amount} \times Ri.PoC_n & 1 \le n \le 6 \\ u.sPoC_{amount} \times Ri.PoC_{6th} & n > 6 \end{cases}$$

11.3.3 PoC Protocol – Incentives (Graphic Illustration)

The APR of the incentive is initially 15%, and then decreases by 15% every year. After the sixth year, the APR will no longer decrease as can be seen from the below graph:



11.3.4 PoC Protocol - Effective Storage Services

Role	Spec
Total amount of PoC effective storage services	198,000,000
Decay Model	Half-life model
Decay Period (EB)	3,000
Attenuation by	Attenuation based on accumulated storage space service total
Reward distribution window	Once every 8640 blocks (24 hours in real-time)

11.3.5 PoC Protocol - Effective Storage Services (Formula)

Role	Spec
e. PoC	`The total amount of PoC work part tokens, fixed value` : 1980,000,000

n	the nth EB, starting from 1, 1 means 1EB
C. PoC$_n$	PoC token output in the nth EB
ye. PoC	`Decreasing ratio, fixed value : 0.5`
Ø. PoC	`PoC decay period, fixed value : 3000 EB`
Te. PoC$_n$	PoC Effective Storage Services cumulative output in the nth EB

Calculation of the total issuance amount of the PoC effective storage services of the Nth EB:

$$Te.PoC_n = e.PoC \times \left(1 - \gamma e.PoC^{\frac{n}{\emptyset.PoC}}\right)$$

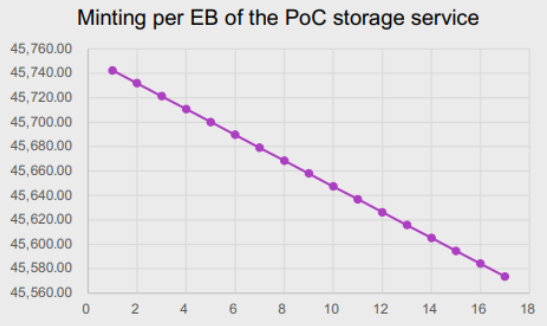
Output of PoC effective storage service in the nth EB:

$$C.PoC_n = e.PoC \times \left\{\left(1 - \gamma e.PoC^{\frac{n}{\emptyset.PoC}}\right) - \left(1 - \gamma e.PoC^{\frac{n-1}{\emptyset.PoC}}\right)\right\}$$

11.3.6 PoC Protocol - Effective Storage Services (Graphic Illustration)

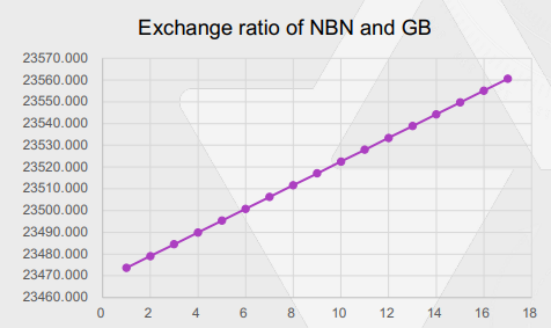
Minting per EB of the PoC storage service

Every time the accumulated storage space reaches 1 EB, the total amount of NBN issued in the EB decreases as can be seen in the below graph:



Exchange ratio of NBN and GB

Each time the accumulated storage space reaches 1 EB, the number of GB required to exchange 1 NBN within the EB increases as illustrated in the below graph:



11.3.7 PoC Protocol - Effective Storage Services (Reward for PoC Nodes)

Role	Spec
S	Lease signed storage space (GB)
$Re.\ PoC_n$	Storage space and NBN conversion ratio
D	Leasing time, unit in day
λ_{poc}	Storage Pricing Weighted Value
β_{sr}	Storage Reward Weighted Value
β_{br}	Bandwidth Reward Weighted Value
Θ_b	Bandwidth constraint value
K_{poc}	PoC Storage Work Adjustment Factor
$eReward.\ PoC_n$	Effective storage services Reward for PoC Nodes

PoC node effective storage services reward calculation:

$$eReward.PoC_{\mathrm{n}} = \frac{S}{Re.PoC_n} \times D \times \lambda_{\mathrm{poc}} \times (\varphi_{\mathrm{sr}} + \varphi_{br} \times \theta_b) \times \kappa.s_{\mathrm{poc}}$$

11.3.8 PoC Protocol - IP Communication Service Rewards for PoC Nodes

Role	Spec
F	Effective traffic, traffic that is paid for using credit purchased with NBN
$Re.\ PoF_n$	Effective traffic and NBN conversion ratio in the nth decay period
λ_{pof}	Traffic Pricing Weighted Value

K. f_{poc}	PoC flow adjustment factor
fReward. PoC_n	IP communication services Rewards for PoC Nodes in the nth decay period

PoC node IP communication services reward calculation:

$$fReward.PoC_n = \frac{F}{Re.PoF_n} \times \lambda_{pof} \times \kappa.f_{poc}$$

11.3.9 PoC Protocol - PoC Node Reward Rules

PoC nodes have the ability to receive rewards from both the PoC and PoF protocols simultaneously. The storage reward for PoC nodes is increased by the number of bandwidth reward systems. For traffic rewards, the PoC node must have paid traffic, which is achieved by burning credit. Additionally, the PoC node is required to set both the rental unit price (for the PoC protocol) and the traffic unit price (for the PoF protocol) simultaneously.

11.3.10 PoC protocol - PoC Effective Storage Service Billing

Role	**Spec**
Fee(credit)	Credit paid by users for storage
S	The number of storage space signed by the lease, in GB
D	Rental time, unit day
P_f	Credit/GB Storage contract unit price, in credit/GB
St(NBN)	The service commitment pledged by the PoC service providers for the lease, in NBN
TWAP (NBN)	Time-weighted average price of NBN

The formula for calculating credit paid by consumers for storage leases:

$$Fee(credit) = S \times D \times P_f$$

The calculation formula for NBN pledged by service providers for storage leases:

$$St(NBN) = Fee(credit) \div TWAP\ (NBN)$$

The credit paid by the consumer will be destroyed after the contract is signed, and the NBN pledged by the service provider will be returned according to the actual service time after the contract is terminated.

11.4 PoC Node Pledge Calculation

PoC nodes are required to participate in both PoC and PoF protocols and therefore must also pledge bandwidth. The number of pledges for PoC nodes is calculated as the sum of NBN pledged for storage and NBN pledged for bandwidth. There is no coefficient for storage pledge; instead, the number of 1TB pledges is multiplied by the number of sealed storage spaces. If a PoF node wishes to upgrade to a PoC node, they only need to add additional pledge storage to the original bandwidth pledge amount.

Role	Spec
$\mathcal{P}_{sr.n}$	nTB Storage reward weighting value
n	TB
$E.\ sr_w$	Storage reward factor
$E.\ sr_a$	Storage reward adjustment factor
$u.\ sPoC_{amount}$	The number of PoC nodes pledged
$s.\ PoC_y$	1TB pledged NBN number in yth year
Sealed space	Number of storage nodes sealed
Claimed bandwidth	Node declared bandwidth
T. PoC	Cumulative minting amount of PoF
$\sum S$	Total network storage space
S. PoF	1Mbps Bandwidth pledge NBN number
Δ_{poc}	1 TB stake, constant
Y	Year

11.4.1 PoC Node Pledge Calculation (Formula)

- *Storage reward weighting value of n TB*

$$\varphi_{sr.n} = log_{20}\, n \times \varepsilon.\, sr_w + \varepsilon.\, sr_a$$

- *PoC node pledge number calculation*

$$u.\, sPoC_{amount} = (S.\, PoC \times Sealed\ Space\ ) + (S.\, PoF \times Claimed\ bandwidth)$$

- *Calculation of the number of pledges for 1 TB of storage space*

$$s.PoC_y = \begin{cases} \Delta_{poc} & y = 1 \\ min\left(T.PoC \times \frac{1}{\sum S},\ \Delta_{poc}\right) & y > 1 \end{cases}$$

Illustration:

- In the first year, *1TB Pledge NBN* is set to constant.

- Starting from the second year, formula calculation is enabled. If the calculated value of the formula is less than the set constant, the calculated value shall prevail; if the calculated value of the formula is greater than or equal to the set constant, the constant shall prevail.

11.4.2 Traffic / Storage Pricing Weighted Value

Role	Spec
Λ_{pof}	Traffic Pricing Weighted Value
TP_c	Custom traffic price
TP_b	Basic traffic price
$\mathcal{E}_{TP}$	Traffic pricing factor
Λ_{poc}	Storage Pricing Weighted Value
SP_c	Custom storage price
SP_b	Basic storage price
$\mathcal{E}_{SP}$	Storage pricing factor

Traffic Pricing Weighted Value:

$$\lambda_{pof} = \begin{cases} \frac{TP_c}{TP_b} \times (1 + \xi_{TP}), & TP_c > TP_b \\ 1, & TP_c = TP_b \\ \frac{TP_c}{TP_b} \times \frac{1}{1 + \xi_{TP}}, & TP_c < TP_b \end{cases}$$

Storage Pricing Weighted Value:

$$\lambda_{poc} = \begin{cases} \frac{SP_c}{SP_b} \times (1 + \xi_{SP}), & SP_c > SP_b \\ 1, & SP_c = SP_b \\ \frac{SP_c}{SP_b} \times \frac{1}{1 + \xi_{SP}}, & SP_c < SP_b \end{cases}$$

11.4.3 PoC Node Verification and Penalty

To ensure the integrity of the Proof of Capacity (PoC) node, a verification challenge will be issued daily for both storage and bandwidth. The PoC node must pass both verifications to receive rewards. Failure to pass either verification will result in the forfeiture of rewards for the day, including PoF and PoC incentives and work.
In the case of continuous failure, where the node fails to pass both verifications for 30 consecutive days, the PoC node will face penalties. This includes the destruction of the pledged NBN and all locked rewards, as well as the loss of PoF and PoC mining rights. If the node wishes to participate again, it will need to re-stake. These measures ensure the proper functioning and security of the PoC node network.

**Exception handling: Considering the situation such as hard disk damage, allow the PoC node to perform replacement operations on the existing storage package, that is, the PoC node can repackage on the new hard disk and replace the original pledge data.*

11.5 On-chain GAS Fee Design

The on-chain gas fee design consists of a basic fee and tips, where the gas fee is calculated as the sum of these two components. Additionally, 50% of the gas fee is burned, while the remaining 50% is split, with 25% going to the validator and the other 25% going elsewhere.

11.6 Deflationary Model

The deflationary model is a concept that aims to reduce the circulating supply of a currency, resulting in an increase in its value over time. One way to achieve this is through output deflation, where the total supply of the currency decreases gradually over time. Another method is the destroy NBN converted credit model, where the currency is destroyed in exchange for non-transferable tokens, which can be used for other purposes. Additionally, GAS fee destruction can also be implemented to reduce the overall supply of the currency. However, the deflationary model may also include punishment for destruction, which is

designed to discourage individuals from destroying the currency in large quantities. Overall, the deflationary model is a strategy that can be used to increase the value of a currency over time by reducing its supply.

12. LEGAL DISCLAIMER, REPRESENTATIONS AND WARRANTIES

12.1 Disclaimer

This whitepaper aims to provide an explanation of the 'Nibiru Network', which is a next-generation decentralized secure network. The mainnet token associated with the Nibiru Network is the 'NBN'. This token can be mined by service providers and can be used by consumers to purchase services within the Nibiru Network's ecosystem by using credit points. It is important to note that the NBN tokens are not intended to be considered securities in any jurisdiction. Rather, they are utility tokens by nature.

This whitepaper does not intend to constitute an offer of buying securities or a solicitation for investment in securities in any jurisdiction. Additionally, it does not provide any recommendations or advice to sell or purchase NBN tokens. This document cannot be the basis for making any investment decision or concluding an investment agreement. The NBN tokens are intended solely for the purposes as contained within this whitepaper.

As a potential investor, it is important to note that if you are a citizen or resident of any jurisdiction where cryptocurrencies are banned or restricted either partially or completely, you shall not purchase any NBN tokens. It is important to comply with the regulations and laws of your jurisdiction in relation to cryptocurrency investments. Moreover, the information provided in this Whitepaper has not been approved or checked by regulatory bodies and authorities. Publishing and distributing this whitepaper does not imply compliance with the laws, regulatory requirements, rules or regulations. Therefore, there may be some ambiguities and risks associated with the company and its operations, as well as the use of NBN tokens.

Since the Whitepaper is provided for informational purposes only and cannot be used as a legal document or investment agreement. It is strongly recommended to read the following sections before making any investment decisions.

12.2 No Representations and Warranties

We hereby disclaim and waive any representation, warranty or undertaking, express or implied, in any form whatsoever to any entity or person, as well as any representation, warranty or undertaking with

the accuracy or completeness of any information provided in this Whitepaper. This Whitepaper is for informational purposes only and should not be relied upon for making any investment decisions. We do not guarantee the accuracy, completeness, reliability or timeliness of any information contained herein, nor do we make any representation or warranty regarding the suitability or fitness for any particular purpose of any information, product, service, or platform described in this Whitepaper. Any reliance on this Whitepaper is at your own risk. We assume no responsibility for any errors or omissions in this Whitepaper or for any loss or damage arising from or in connection with the use of this Whitepaper or any information contained herein.

12.3 Representations and Warranties Provided By You

By receiving and/or accessing any information provided in this Whitepaper or any part thereof, you represent and warrant to the company the following:

i. You agree and acknowledge that the NBN tokens are intended solely for use as utility tokens within the Nibiru Network ecosystem and do not constitute any kind of currency, debt security, stock or share, right, option, or derivative in relation to any debt obligation, share, or stock, unit in a scheme of collective investment, unit in a business trust, derivative unit in business, or any other security or class of securities, under the laws of any jurisdiction.

ii. You confirm that you have a basic understanding of the operation, functionality, use, storage, transfer mechanisms, and other material features of cryptocurrencies, software systems based on blockchain, wallets for cryptocurrencies or other related tokens storage mechanisms, and the technology of blockchain and technology of smart contracts.

iii. You acknowledge and agree that our businesses as well as systems and their operations may contain several risks and uncertainties, including but not limited to, risks associated with the development and implementation of the Nibiru Network, regulatory and legal risks, risks associated with the use and exchange of cryptocurrencies and other related tokens, and market and price volatility risks.

iv. You acknowledge and agree that to the maximum extent possible by the applicable laws, rules and regulations, we shall not be liable for any direct, indirect, incidental, special, punitive, or consequential damages, including but not limited to, loss of income, profits, or loss of use or data, caused by or arising from any reliance on any part of this Whitepaper by you or any other person.

v. You agree and acknowledge that the contents of this Whitepaper do not constitute any offer, solicitation or sale of any securities, investment products or financial instruments in any jurisdiction, and that the purchase and/or sale of NBN tokens shall be subject to applicable laws and regulations in your jurisdiction.

vi. You agree and acknowledge that the company is not responsible for any unauthorized use or access to your personal data or other confidential information resulting from any breach of security or other cyber-attacks or incidents that may occur in connection with the use of the Nibiru Network or the NBN tokens.

vii. You confirm that you are not a citizen or resident of any jurisdiction where the purchase, ownership, or use of cryptocurrencies or related tokens is prohibited, restricted, or otherwise illegal.

viii. You agree and acknowledge that the company may modify or amend this Whitepaper at any time without notice, and that any such modification or amendment shall be binding on you upon publication on the company's website.

12.4 Cautionary Note on Forward-Looking Statements

We would like to caution readers that certain statements and claims made in this Whitepaper may be considered forward-looking statements, which involve risks and uncertainties that may result in materially different outcomes than those projected or anticipated. Forward-looking statements may contain words such as "believe," "if," "will," "anticipate," "plan," "would," "possible," "aim," "target," "could," "estimate," "expect," "intend," "may," "should," or other similar terms, but are not limited to these terms alone. Forward-looking statements in this Whitepaper include, but are not limited to, information about the financial position, plans, prospects, and business strategy of our company and the future of cryptocurrencies and the banking industry. These statements are projections, not accomplished facts. They include statements regarding the company's profitability, prospects, and revenue, as well as possible industry trends.

We would like to emphasize that forward-looking statements are subject to known and unknown risks, uncertainties, and other factors that may cause actual results, performance, or achievements to differ materially from any future results, performance, or achievements that were initially expected or intended by such forward-looking statements. Such factors include:

i. changes in the cryptocurrency market, political or social conditions, or the regulatory environment in countries where we conduct our operations and businesses;

ii. risks and uncertainties related to our ability to implement our future plans and business strategy, as described in this Whitepaper;

iii. changes in the interest/exchange rates of crypto and fiat currencies;

iv. shifts in expected growth strategies and anticipated internal growth;

v. changes in the availability of NBN tokens and amount paid to us in connection with our respective businesses and operations;

vi. alterations in the remuneration of our employees, whom we primarily rely on to operate and manage related business operations and activities;

vii. changes in the preferences of our customers;

viii. alterations in the market competitive environment that may affect our ability to realize our plans and compete;

ix. changes in the future capital requirements for us and availability of sufficient funding and resources to finance such needs;

x. unsafe conditions that may threaten public and social safety, such as war, revolution, or terrorism;

xi. emergency and natural disasters that may affect the ability of our team to implement the working plan mentioned in this Whitepaper; and

xii. other factors outside of our control.

We would like to stress that all forward-looking statements made or expressed by us or our representatives are entirely qualified in full by the above-mentioned factors. Taking into consideration that these risks and uncertainties could influence the actual future results, could differ materially from the reality, or the expected attainments of the company and could be materially different from initially expressed or implied by the forward-looking statements in this Whitepaper, unjustified trust must not be put in these statements. We caution readers that they should not place undue reliance on these forward-looking statements. These statements are relevant only as of the date of this Whitepaper.

Neither we nor our representatives take any responsibility or give any guarantee that future results

will correspond with the aforementioned forward-looking statements. The practical results, progress, and achievements of our company may be materially different from those stated in these forward-looking statements.

No information contained in this Whitepaper should be perceived as a promise, representation of commitment or undertaking as to the future performance of our policies. In addition, we, hereby, waive any responsibility for updating any of those aforesaid forward-looking statements, or publicly announced revisions to these forward-looking statements reflecting future progress, events or circumstances, even if new information becomes publicly available or other unexpected events take place in the future.

12.5 Risk Warning

By participating in the NBN tokens and the Nibiru Network, you acknowledge and accept the risks associated with them. We want to emphasize that consumers who engage in this project understand and are willing to bear the corresponding risks and consequences personally.

We, as a company, cannot be held liable for any direct or indirect losses that you may incur due to participating in NBN tokens or the Nibiru Network. These losses may include investment risks arising from consumers' participation in the projects recommended by Nibiru Network, errors or inaccurate information resulting from personal understanding, and losses arising from individual trading in all types of blockchain assets.

We cannot guarantee that the value of NBN tokens will appreciate, and there is a possibility of a decline in its value. Individuals who do not use Nibiru Network correctly may lose their right to use the corresponding tokens. Please note that acquiring, possessing, transacting with or dealing in NBN tokens does not grant any individual the right to participate, control, or make decisions on our company. We are not a bank or investment in the conventional sense and, therefore, do not fall under the banking regulations.

The regulatory attitude of governments towards blockchain and encrypted digital currency industries is still unclear, and the risk of establishing a blockchain industry fund is objective. The blockchain industry is at a very early stage of development, and there are many uncertain risks. In addition, digital currency is stored in a special way, and fund risks may be caused by human errors. To mitigate fund risks, all large-value digital currencies are stored by multiple wallets + cold storage in joint administration by members of the foundation. This multi-signature method effectively reduces the risk of theft and embezzlement of funds, but these risks still exist and may lead to the final failure of the project.

12.6 Market and Industry Information and No Consent of other Persons

Please note that this Whitepaper contains market and industry information, and forecasts obtained from market research, publicly available information, as well as internal surveys, reports and studies. Although such information has been obtained from sources deemed to be reliable, we cannot guarantee the reliability or completeness of such information.

No person, except for our team members, has agreed or consented to include his/her name, personal data, or any information related to this person in connection with this Whitepaper. No one has the right to require such persons to confirm or update the provided information. There is no warranty or assurance that such information may be reliable, accurate, or updated.

We have taken reasonable steps to ensure that the information in this Whitepaper is released accurately and in the proper context. However, we did not conduct any independent review of information extracted from external sources of third parties and did not confirm the accuracy or completeness of such information or the assumptions based on them. Therefore, neither we nor our relevant team members, who are acting on our behalf, shall be obligated to provide any updates on the representations or guarantees regarding the accuracy or completeness of such information.

12.7 Terms Used in the Whitepaper

To facilitate a better understanding of the NBN tokens and the Nibiru Network, certain technical terms and abbreviations have been used in this Whitepaper. Please note that such descriptions and allocated meanings should not be interpreted as being definitive of their entire meanings and may not match industry standard meanings or use. Words suggesting the singular shall, where fitting, include the plural and vice versa. Words importing the masculine gender shall, where appropriate, include the feminine and neuter genders and vice versa. References to persons shall include corporations.

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