CS Cloud Service

The Decentralized Cloud, powered by Blockchain

WHITEPAPER

A decentralized cloud computing platform
powered by the CS token

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cscloudservice.com
docs.cscloudservice.com

Technical document for investors, partners and clients.
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Contents

1. Executive Summary

CS Cloud Service is a decentralized computing platform that pairs a native cryptocurrency, the **CS Token**, with a distributed cloud infrastructure. Instead of relying on centralized hyperscalers, the network is built by thousands of independent operators who contribute CPU, GPU, memory, storage and bandwidth, and receive CS rewards proportional to the services they deliver.

The CS blockchain uses **Proof of Work** with the **ZelHash** algorithm (Equihash modified 125,4), ASIC-resistant and GPU-friendly, enabling a truly fair launch — no premine. The emission policy stabilizes the block reward at **37.5 CS** permanently after only two halvings, ensuring continuous incentives for miners and **CS Node** operators indefinitely.

The network is structured into **4 CS Node tiers** — PROTON, ELETRON, NEUTRON and FOTON — each with increasing collateral and hardware requirements and proportional shares of the block reward. CS Nodes do more than validate transactions: they host real workloads (*AI/ML*, WordPress, games, databases, Docker containers and domain management) accessible through the CS Cloud marketplace.

> **In one sentence:** CS Cloud Service democratizes access to cloud computing by turning independent providers into part of a global, non-custodial, transparent and self-incentivizing network.

Key Highlights

- **Algorithm:** ZelHash (Equihash 125,4) — ASIC-resistant, GPU-friendly.
- **Block time:** 2 minutes.
- **Block reward:** 150 CS, with two halvings → 75 CS → 37.5 CS (permanent floor).
- **Fair launch:** 100% via PoW mining, no premine.
- **CS Nodes:** 4 node tiers with collateral between 10,000 and 500,000 CS.
- **Real use cases:** AI/ML, web hosting, online games, databases, Docker, domains.
- **Governance:** Open community, open source.

2. Introduction

2.1 The Centralized Cloud Problem

The global cloud computing market is concentrated in a handful of vendors. This centralization produces four practical consequences:

1. **Vendor lock-in.** Migrating workloads between providers is expensive and technically costly.
2. **Opaque pricing.** Pricing is set unilaterally, with little transparency about underlying costs.
3. **Censorship and geopolitical risk.** Corporate or regulatory decisions can cut off access to entire regions, projects or users.
4. **Concentrated revenue.** The capital generated by digital infrastructure stays with a few

shareholders, instead of flowing to those who actually provide hardware, energy and operations.

2.2 The CS Cloud Service Proposal

CS Cloud Service proposes that cloud infrastructure be **treated as a public good**, operated by anyone, under transparent rules anchored on a blockchain. The network is built around:

- A native cryptocurrency (**CS**) that pays for services and rewards contributors.
- A network of geographically distributed **CS Nodes**, organized in four capacity tiers.
- A services marketplace (AI/ML, hosting, databases, containers, domains).
- A **ZelHash** consensus algorithm that delivers security without favoring expensive specialized hardware.

2.3 Long-Term Vision

The long-term goal is to make CS Cloud Service a real, auditable alternative to centralized providers, with progressively distributed governance.

3. Technology Overview

3.1 Network Layers

CS Cloud Service is structured in three composable, independent layers:

- **Layer 1 — P2P Network.** Inter-node communication, peer discovery, block and transaction propagation.
- **Layer 2 — Blockchain.** Immutable transaction ledger, Proof of Work validation (ZelHash) and UTXO model.
- **Layer 3 — CS Cloud.** Computing services running on the CS Nodes (hosting, AI, games, data).

3.2 Technical Specifications

Parameter	Value
Name	Cloud Service
Ticker	CS
Consensus	Proof of Work (ZelHash — Equihash 125,4)
Block time	2 minutes
Decimals	8
Difficulty adjustment	LWMA3 (every block, 60-block window)
P2P (mainnet)	TCP port 16178
P2P (testnet)	TCP port 16179
RPC / REST	TCP port 16180
WebSocket	TCP port 16181
Initial block reward	150 CS
Halvings	2 (then fixed at 37.5 CS)
Halving interval	655,350 blocks ($\approx$ 2.5 years)
Max supply	None (permanent tail emission)
Premine	0%

Table 1: Technical parameters of the CS Cloud Service blockchain.

3.3 Consensus Mechanism: ZelHash

ZelHash is a variant of Equihash ($n = 125$, $k = 4$, personalization string "ZelProof"), chosen because it combines three essential properties:

- **ASIC resistance.** The computation is memory-intensive ($\approx$ 1.3 GB of VRAM), making specialized hardware economically unviable.
- **GPU friendly.** Any consumer GPU with enough memory can participate.
- **Fair distribution.** Hashrate naturally spreads across many operators, reducing centralization risk.

3.3.1 Difficulty Adjustment — LWMA3

Difficulty is recalculated every block using the **LWMA3** (*Linear Weighted Moving Average* v3) algorithm with a 60-block window. Recent blocks carry more weight, allowing fast reaction to hashrate swings and resisting difficulty-oscillation attacks.

3.3.2 Transaction Finality

Confirmations	Security	Recommended for
1	Basic	Low-value microtransactions
3	Moderate	Routine payments
6	Good	Medium-value transfers
12+	High	Institutional settlement

3.4 Blockchain Architecture

The CS blockchain uses the **UTXO** (*Unspent Transaction Output*) model, the same proven in production by Bitcoin and a family of derived blockchains. Each transaction consumes prior outputs and creates new ones, all verifiable through cryptographic signatures and lock/unlock scripts.

Why UTXO? The UTXO model offers natural validation parallelism, incremental privacy (new addresses per transaction) and audit simplicity — important properties for a network with both financial *and* computational components.

4. Tokenomics

4.1 Emission Model

CS Cloud Service has **no fixed maximum supply**. Emission is permanent: after only two halvings, the block reward stabilizes at **37.5 CS per block forever**. This is a deliberate design decision to prevent the network from relying solely on transaction fees long term — historically a source of instability during low-activity periods.

4.1.1 Gradual Ramp

The first 20,000 blocks use a ramp phase to avoid an abrupt start. The block reward grows gradually from zero to 150 CS, totaling approximately **1,500,000 CS** during this phase.

4.1.2 Halving Schedule

Period	Block range	Reward	Duration
Ramp	0 — 19,999	0 → 150 CS	≈ 28 days
Era 1	20,000 — 665,349	150 CS	≈ 2.45 years
Era 2	665,350 — 1,320,699	75 CS	≈ 2.49 years
Era 3+	1,320,700+	37.5 CS	Permanent ∞

Table 2: CS emission schedule.

4.2 Projected Circulating Supply

Milestone	Height	Circulating	Annual emission
End of ramp	20,000	≈ 1.5M CS	—
Year 1	262,800	≈ 37.9M CS	≈ 39.4M CS
Year 2 (1st halving)	665,350	≈ 98.3M CS	≈ 39.4M CS
Year 5	1,314,000	≈ 147.0M CS	≈ 19.7M CS
Year 10	2,628,000	≈ 196.5M CS	≈ 9.9M CS
Year 20	5,256,000	≈ 295.0M CS	≈ 9.9M CS
Year 50	13,140,000	≈ 590.7M CS	≈ 9.9M CS
Year 100	26,280,000	≈ 1.08B CS	≈ 9.9M CS

Table 3: Projected circulating supply. From Era 3, fixed annual emission is $262{,}800 \times 37.5 = 9{,}855{,}000$ CS/year.

4.3 Block Reward Distribution

Each mined block splits its reward across 5 categories — miners and the 4 CS Node tiers. The shares are defined in source code (`src/csnode/csnode.h`) and can only be changed via a hard fork:

Recipient	Share	Example (150 CS)	Example (37.5 CS)
Miners (PoW)	25%	37.500 CS	9.375 CS
PROTON nodes	5%	7.500 CS	1.875 CS
ELETRON nodes	10%	15.000 CS	3.750 CS
NEUTRON nodes	20%	30.000 CS	7.500 CS
FOTON nodes	40%	60.000 CS	15.000 CS
Total	**100%**	**150.000 CS**	**37.500 CS**

Table 4: Block-reward split across miners and node tiers.

Each tier's share is split **equally** among all active nodes in that tier — so the more active nodes in a tier, the smaller the per-node reward.

4.4 Fair Launch

CS Cloud Service holds no premine. **100% of the supply** is distributed through Proof of Work mining, from block 1 onward.

Origin	Percentage
Mining (PoW)	100%
Premine	0%

4.5 Transaction Fees

All transaction fees go entirely to miners.

Priority	Fee	Confirmation
Low	0.00001 CS/KB	10–30 min
Medium	0.0001 CS/KB	5–10 min
High	0.001 CS/KB	2–5 min

4.6 Comparison with Other Networks

Feature	CS Cloud Service	Bitcoin	Ethereum
Max supply	None (fixed tail)	21M BTC	None
Block time	2 minutes	10 minutes	∼12 seconds
Algorithm	ZelHash (PoW)	SHA-256 (PoW)	PoS
Premine	No	No	Yes
Halvings	2 (then fixed)	∼33 to zero	N/A
Permanent emission	Yes (permanent)	No	Yes (variable)
Decimals	8	8	18
Extra utility	Cloud computing	—	Smart contracts

Table 5: Design comparison between CS, Bitcoin and Ethereum.

5. CS Nodes — The Backbone of the Network

CS Nodes are the decentralized servers that sustain CS Cloud Service. Each CS Node runs the full daemon (`csd`) and simultaneously participates in blockchain validation and provides computing resources to the CS Cloud marketplace.

5.1 The 4-Tier Model

CS Nodes are split into four performance tiers, with increasing collateral and hardware requirements and proportional block-reward shares.

Tier	Collateral	vCPU	RAM	Storage	Block %
PROTON	10,000 CS	4	8 GB	220 GB SSD	5%
ELETRON	25,000 CS	8	30 GB	440 GB SSD	10%
NEUTRON	100,000 CS	16	61 GB	880 GB SSD	20%
FOTON	500,000 CS	32+	122+ GB	1760+ GB SSD + 24+ GB GPU	40%

Table 6: CS Node requirements per tier.

5.1.1 PROTON — Entry Tier

Ideal for enthusiasts, home servers. 5% of the block reward, shared among all active PROTONs.

5.1.2 ELETRON — Mid Tier

For experienced operators with mid-range dedicated servers. 10% of the block reward.

5.1.3 NEUTRON — High Tier

For infrastructure professionals with high-bandwidth dedicated servers. 20% of the block reward.

5.1.4 FOTON — Enterprise Tier

For data centers and infrastructure businesses. Includes a dedicated GPU requirement (24+ GB) for AI/ML workloads. 40% of the block reward.

5.2 Collateral and Custody

Collateral acts as a commitment guarantee, not as custody. It stays in a specific UTXO of the operator's own wallet:

- Remains **under the operator's full control** at all times.
- Is **never sent** to a custodial contract or third party.
- Requires 100 block confirmations (≈ 3.3 hours) for activation.
- Can be unlocked at any time — doing so deactivates the node.

> If the operator spends the collateral UTXO, the node is **automatically deactivated** and loses its reward ranking position.

5.3 Hardware Verification

Before a CS Node joins the active network, the benchmark daemon (`csbenchd`) runs local tests to ensure the machine meets the tier's requirements. Results are signed and submitted to the blockchain as a benchmark transaction, guaranteeing that the network only takes on real, auditable resources.

5.4 Confirmation Cycle

CS Nodes must periodically re-confirm presence to remain reward-eligible:

Event	Blocks
Initial collateral confirmation	100
Periodic re-confirmation	every 160
Minimum between re-confirmations	120
"DoS" penalty for missed confirmation	180 blocks

The CS Node OS (`cs-mage`) fully automates this cycle — no manual operator intervention required.

5.5 Individual Rewards

Each tier's share is split equally among all active nodes in the tier:

$$\text{Reward per block} = \frac{\text{Block Reward} \times \%\text{Tier}}{\text{Active nodes in Tier}}$$

Example (Era 1, 100 active PROTON nodes):

$$\frac{150 \times 0.05}{100} = 0.075 \text{ CS/block} \approx 54 \text{ CS/day}$$

6. The CS Cloud Platform

Built on top of the CS blockchain runs the **CS Cloud** marketplace, where clients pay in CS Token for services hosted on the CS Nodes themselves. These services produce an **additional layer of real revenue** for operators — on top of block rewards.

6.1 Available Services

6.1.1 AI & Machine Learning

Distributed GPUs (FOTON tier) execute model training and inference. Billed per GPU-hour, in CS.

6.1.2 WordPress / CMS Hosting

Websites and web apps hosted on CS Nodes. One-click setup, no server administration required.

6.1.3 Game Servers

Dedicated game servers (Minecraft, FiveM, ARK, etc.) provisioned on demand and billed per hour.

6.1.4 Managed Databases

PostgreSQL, MySQL, MongoDB and Redis with automatic backups and geographic replication.

6.1.5 Container Hosting (Docker)

Docker containers executed on any compatible CS Node, with optional horizontal scaling.

6.1.6 Domain Registration & Management

A decentralized DNS system tied to traditional domains, with CS-based payment.

6.2 Marketplace and Blockchain Integration

1. The client signs the service contract from the CS wallet.
2. The transaction is recorded on chain, with CS payment locked or released block by block.
3. Eligible CS Nodes (by tier, capacity and location) take on the workload.
4. The benchmark daemon and proof-of-service mechanisms audit execution.
5. Payments are released as the service is delivered.

7. Network Architecture and APIs

7.1 P2P Layer

The CS Cloud Service P2P layer uses automatic peer discovery, flood propagation of blocks and transactions, and standard UTXO-family protocols:

Message	Description
`version`	Initial peer handshake
`verack`	Version acknowledgment
`addr`	List of known peer addresses
`inv`	Inventory of available objects
`getdata`	Request for specific objects
`block`	Full block transmission
`tx`	Transaction transmission
`ping/pong`	Liveness check

Table 7: Main P2P protocol messages.

7.2 Peer Discovery

New nodes discover initial peers via DNS seeders:

- `seed.cscloudservice.com`
- `seed2.cscloudservice.com`

Additionally, any node can add peers manually via configuration.

7.3 Developer APIs

CS Cloud Service exposes multiple integration interfaces:

API	Typical use	Protocol	Port
JSON-RPC	Node management, wallet operations	HTTP POST	16180
REST	Blockchain data, transactions	HTTP GET	16180
WebSocket	Real-time notifications	WS	16181
ZeroMQ	Event streaming	ZMQ	Configurable

Official SDKs and examples are provided in Python, JavaScript/Node.js and Go.

8. Mining

8.1 How to Mine CS

CS mining is open to anyone with a compatible GPU and ≈ 1.3 GB of VRAM. Two main paths:

- **Solo Mining.** Mines directly to the local node. Suited for operators with high hashrate or development environments.
- **Pool Mining.** Pools hashrate with other miners, providing regular payouts. Typical pool fees range from 1% to 2%.

8.2 Supported Mining Software

Software	GPU	Notes
T-Rex Miner	NVIDIA	Focus on modern NVIDIA GPUs
TeamRedMiner	AMD	Tuned for RDNA/RDNA2 architectures
lolMiner	AMD + NVIDIA	Strong multi-platform compatibility
NBMiner	AMD + NVIDIA	Compatible with most current hardware

8.3 Miner Rewards

Miners receive 25% of each block's total reward, plus 100% of the transaction fees in the block. Considering the halving schedule:

Era	Total reward / block	Miner share
Era 1 (up to block 665,349)	150 CS	37.500 CS
Era 2 (up to block 1,320,699)	75 CS	18.750 CS
Era 3+ (permanent)	37.5 CS	9.375 CS

9. Network Security

9.1 Consensus Security

Proof of Work secures the network via **real economic cost**: to attack, an adversary would need to control over 50% of the global hashrate for long enough to revert confirmed blocks. The cost of running that infrastructure, in hardware and energy, is made prohibitive by the wide GPU mining distribution itself.

9.2 Eclipse and Sybil Protection

- Per-subnet connection limits (`maxconnections`) and periodic peer rotation.
- Banscore for anomalous behavior, with configurable `bantime` (24h by default).
- Optional whitelist (`whitelist`) for trusted infrastructure.

9.3 Wallet Security

CS Cloud Service offers two official wallet options:

- **Web Wallet (wallet.cscloudservice.com)** with a browser extension that signs transactions locally. Your keys never leave the extension.
- **CLI Wallet (`cs-cli`)** for advanced users and node operators, with local `wallet.dat` encryption.

Standard security recommendations apply: encrypt the wallet with a strong password, keep backups in a safe place, consider cold storage for large balances, and wait for official hardware wallet support (in development).

9.4 Reporting Vulnerabilities

Security vulnerabilities should be reported responsibly to `contact@cscloudservice.com`, with the option of encrypted PGP communication. We ask that issues remain undisclosed publicly until fixes are available.

10. Roadmap

The roadmap is organized in sequential phases without fixed deadlines: each phase is delivered when the milestones of the previous one are consolidated.

Phase 0 — Genesis (Completed)

- Technical whitepaper.
- Basic CS wallet (web).
- Initial community on Discord and GitHub.

Phase 1 — Spark (In Progress)

- *Token Generation Event* (TGE) — CS Token mainnet.
- Initial DEX listings.
- CS Explorer (block explorer).

Phase 2 — Orbit (Planned)

- First decentralized CS Cloud nodes.
- Compute resource marketplace.
- Developer SDK (Python, JS).
- On-chain VM provisioning.
- IPFS/Filecoin storage integration.

Phase 3 — Gravity (Planned)

- CS Cloud Console (full dashboard).
- Multi-cloud orchestration.
- Decentralized CDN with CS payment.
- Layer 2 for service microtransactions.
- ISO/SOC2 node certification.

Phase 4 — Expansion (Planned)

- Grants for ecosystem projects.
- Decentralized CS Container Registry.
- Native Kubernetes support.

- AI/ML workloads marketplace.

Phase 5 — Horizon (Planned)

- Autonomous CS protocol — no central entity.
- Cross-chain bridges (ETH, BNB, Solana).
- CS Identity (DID — decentralized identity).
- Global edge computing via CS Nodes.
- Sovereign node certification per country.

Phase 6 — Beyond

- Post-quantum-ready cryptography.
- CS AI Oracle — on-chain infrastructure data.
- Interoperability with other Web3 cloud protocols.

11. Governance

CS Cloud Service follows an **open-source open governance** model: protocol changes are proposed via the public GitHub repository (MauricioSpagnol/cloudservice), discussed on the official Discord, and implemented via *soft* or *hard fork* when consensus is reached among miners and CS Node operators.

The long-term goal, described in phases 5 and 6 of the roadmap, is to **eliminate dependence on any central entity** and move all critical decisions to an on-chain voting process based on CS Node collateral and active participation.

12. Team and Partners

12.1 Founding Team

Maurício Spagnol — Founder (github.com/MauricioSpagnol)

13. Risks and Legal Considerations

13.1 Technology Risks

- **Software vulnerabilities.** Despite internal audits and public reviews, new attack vectors may be discovered. The responsible disclosure policy (`contact@cscloudservice.com`) and GPG-signed releases mitigate — but do not eliminate — this risk.
- **51% attack.** Unlikely given GPU hashrate distribution, but technically possible on low-hashrate networks.

- **Protocol bugs.** *Hard-fork* changes carry the risk of a *chain split* if network adoption is insufficient.

13.2 Market Risks

- Price volatility typical of digital assets.
- Limited initial liquidity before exchange listings.
- Competition with centralized cloud platforms and other DePIN projects.

13.3 Regulatory Risks

Crypto-asset regulation varies across jurisdictions and is evolving. Investors and node operators must verify compliance with local legislation before participating in the network. The CS token is designed as a *utility token*, with its primary function being payment for compute services.

13.4 Final Notice

Nothing in this document constitutes a securities offering, investment recommendation, or legal, tax or financial advice. Each reader is responsible for their own analysis. Running nodes, mining and acquiring CS involve risks — including the partial or total loss of allocated capital — and should be undertaken based on independent research and, when appropriate, consultation with qualified professionals.

14. Conclusion

CS Cloud Service offers a concrete alternative to the centralized cloud-computing model by combining a secure blockchain, fair-launched via ZelHash PoW, with a network of independent providers organized into four CS Node tiers. The result is an infrastructure where capital flows back to those actually providing hardware, energy and operations — not just to shareholders of centralized companies.

The technical milestones — 2-minute block time, permanent emission with a fixed 37.5 CS tail, 4 node tiers with collateral between 10,000 and 500,000 CS, and a marketplace covering AI/ML, hosting, games, databases, containers and domains — are designed to sustain an economically viable network long term.

Invitation. Investors and partners interested in deeper conversation are invited to reach out through the official channels: cscloudservice.com, Discord and GitHub.

Official Resources and Links

- **Official site:** cscloudservice.com
- **Technical documentation:** docs.cscloudservice.com
- **Web wallet:** wallet.cscloudservice.com
- **Marketplace:** marketplace.cscloudservice.com

- **Repository:** github.com/MauricioSpagnol/cloudservice
- **Discord:** discord.gg/jxDZ4EHD
- **Security:** `contact@cscloudservice.com`

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