Quick Start

Start your journey with the open source, public Hedera network.
**Blockchain vs. Hashgraph**

**Blockchain**
- Designed to be slow, as a security measure
- Proof-of-work puzzle adjusts to keep the system at a specific speed, as time is needed to determine which block of transactions to add to the chain
- Efforts to speed up blockchain all make security sacrifices
- Requires heavy electricity usage

**Hashgraph**
- A distributed ledger, but not a blockchain
- Combines a gossip protocol with virtual voting algorithm to efficiently and quickly achieve network consensus on transactions
- Asynchronous Byzantine fault tolerant (highest level of security for distributed networks)
- Does not require heavy electricity usage
The Hedera Network

The Hedera network is ready to scale and made for developers, offering three primary network services:

**3rd PARTY APPLICATIONS**

- **CONSENSUS SERVICE**
  Stream immutable, verifiable, and fairly ordered events to Hedera at 10,000 TPS and $0.0001 USD per message.

- **TOKEN SERVICE**
  Mint and manage native fungible tokens and NFTs mapping to ERC-20, 721, and 1155 standards. Integrate with Smart Contracts for full programmability.

- **SMART CONTRACTS**
  Build EVM-based smart contracts, written in Solidity and Vyper, for enterprise and permissionless applications and protocols.

**HASHGRAPH CONSENSUS**
HBAR (ℏ)  The Native Cryptocurrency of Hedera

HBAR is the native, energy-efficient cryptocurrency of the Hedera public network. HBARs are used to power decentralized applications and to protect the proof-of-stake network.

Network Fuel
Developers use HBARs to pay for network services, such as transferring HBARs, managing fungible ad non-fungible tokens, and logging data. For each transaction submitted to the network, HBARs are used to compensate network nodes for bandwidth, compute, and storage.

Network Protection
Hedera’s proof-of-stake public network uses HBARs staked to network nodes to weight votes on transactions when reaching consensus. Weighted voting with HBARs makes it difficult and expensive for a bad actor to maliciously affect consensus—it would require them to own and stake over one-third of the network’s total supply.

Hedera dapp ecosystem, custody, and hardware wallets: hedera.com/wallets
Low, Predictable Fees

Fees on Hedera are fixed and won’t fluctuate based on network usage. They’re set by the Hedera Governing Council, always based in USD, and paid in HBAR.

Average Transaction Fee
$0.001 USD

Estimate the operational costs of your application: hedera.com/fees

Blazing-Fast Transactions with Finality

The Hedera network is incredibly fast and offers low bandwidth consumption, enabling real-time application experiences for every use case.

10,000+ Transactions per second
3-5 Sec Confirmation to finality
15 Million Gas per second
An Open Source Network—Built by the Community

The Hedera codebase and standards are open source - changes are proposed by the community through Hedera Improvement Proposals (HIPs).

View all HIPs and start contributing:
hips.hedera.com
Governed by Global Organizations

The Hedera Governing Council is a fully decentralized governing body of global organizations consisting of web3 applications, enterprises, and universities.

Learn more about the Hedera Governing Council: hedera.com/council
The Greenest Blockchain

Hedera is committed to sustainable network operations and offers the lowest energy consumption per transaction compared to alternative blockchain networks and modern payment systems.

<table>
<thead>
<tr>
<th>Blockchain</th>
<th>Energy Consumption (kWh per transaction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedera</td>
<td>0.000003</td>
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<tr>
<td>EVM Chain</td>
<td>19</td>
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<tr>
<td>Solana</td>
<td>170</td>
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<tr>
<td>Near</td>
<td>200</td>
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<td>Tron</td>
<td>400</td>
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<td>Toncoin</td>
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<tr>
<td>Avalanche</td>
<td>790</td>
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<tr>
<td>Visa</td>
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<td>Flow</td>
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<td>Tezos</td>
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<tr>
<td>Polkadot</td>
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<tr>
<td>Cardano</td>
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<tr>
<td>Elrond</td>
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</tr>
<tr>
<td>Bitcoin</td>
<td>970,000,000</td>
</tr>
</tbody>
</table>

Hedera uses 1000+ times LESS energy than VISA per transaction.

Estimates for global and per-transaction energy consumption (average between upper and lower bound).

Read the full UCL report: hedera.com/ucl-blockchain-energy

Learn more about the sustainability of Hedera: hedera.com/sustainability
Hedera Use Cases

Hedera network services offer developers a foundation for building game-changing decentralized applications across many use cases.

Decentralized Logging
Create low-cost, scalable, and publicly verifiable logs of data with native consensus timestamps - record payable events, supply chain provenance, IoT sensor data, and more.

On-chain Finance
Build bank-grade applications for the next generation of finance - Hedera powers stablecoin issuance and management, real-world asset marketplaces, lending protocols, and more.

Consumer Engagement & Loyalty
Issue NFT membership and reward tokens in real-time, track engagement transparently, and cultivate a trustworthy, decentralized ecosystem that encourages customer loyalty and participation.

Sustainability
Build, deploy, or access sustainability solutions that take full advantage of Hedera's low energy network, with world-class governance.

Learn more about the use cases and applications built on the open source, public Hedera network: hedera.com
Enterprise Applications

Enterprise applications using Hedera to improve business processes and procedures.

View more enterprise application on Hedera: hedera.com/enterprise-applications
Web3 Applications

Participate in DeFi protocols, staking, NFT marketplaces, payments, creator economy, and more.

AEON  CALAXY  Civic Ledger
clout.art  DOVU  Earth
ENVISION ELECTRONICS  GoMint.  HASHAXIS
Hashgraph.name  HashGuild  hashport
HELISWAP  KrypC  Ledger Works
MIO  Stader  Tangent
SAUCERSWAP  THIRD ACT  TYMLEZ
tune.fm
USD Coin  WEB23

View more permissionless applications on Hedera: hedera.com/ecosystem
Hedera is the most used public network by total transaction count. Applications utilizing Hedera’s network services have driven over 20 billion real-world application transactions on the Hedera mainnet, far surpassing Ethereum’s total transaction count.

Network dashboard and metrics: [hedera.com/dashboard](https://hedera.com/dashboard)