

## Quorum Enterprise Blockchain

Consensys acquired Quorum from JP Morgan in 2020. It replaces Microsoft's Blockchain service (retired in 2021).

**Overview:** Quorum is an enterprise grade blockchain platform. It is a fork of the public Ethereum client 'geth' with several protocol level enhancements to support enterprise needs. The primary purpose of the Quorum platform is to enable an enterprise Ethereum client which empowers businesses to embrace and benefit from blockchain technology.

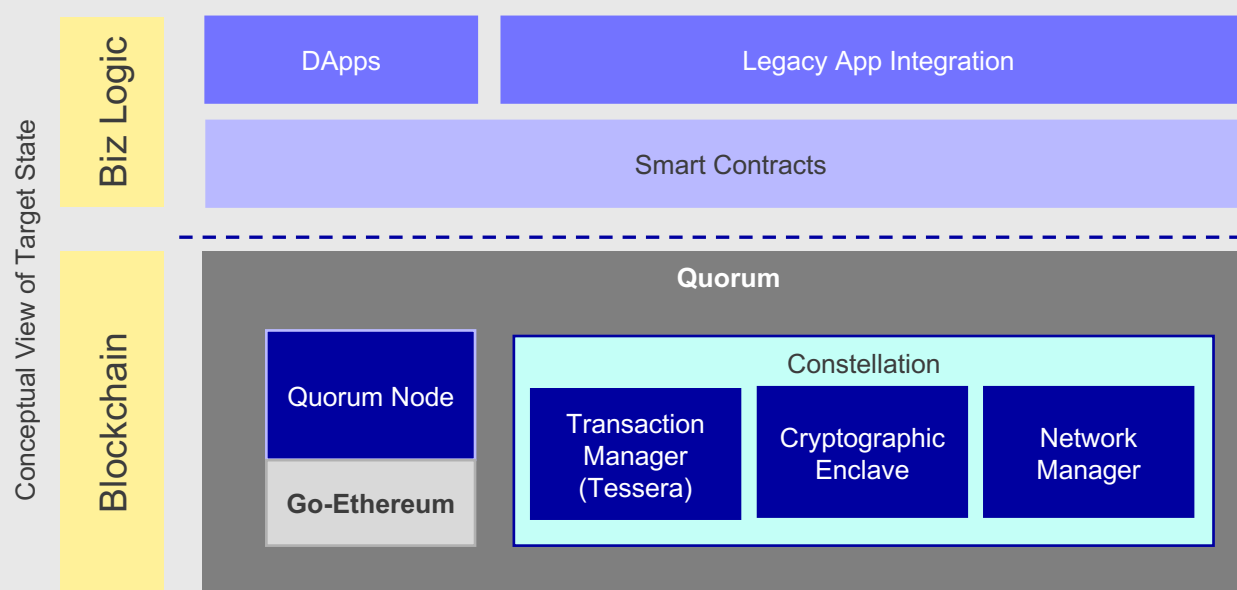
**Benefits:** For businesses that want to reduce the "human element" of aggregating, amending, and sharing data, Quorum will allow for less manual intervention in these processes, which will in turn provide for employees to spend more time on their actual responsibilities.

**Industries:** Quorum is used in logistics, healthcare, identity protection, property, payments, capital markets, and post trade

**Customers:** JP Morgan Chase , Ant Group, ING Group, LVMH, HSBC, Novartis, Cargill, Microsoft  
**Competitors:** IBM Hyperledger Fabric, Corda

### Key Features

- Transaction Privacy - Stores vanilla Ethereum transactions as well as hashes of encrypted private smart contract state changes.
- Uses Advanced encryption techniques - Ensures only permissioned entities can access the network.
- Enterprise Grade Performance – Can process hundreds of transactions per second; enough to support enterprise volumes
- Multiple pluggable consensus mechanisms suitable for enterprise use cases.
- No Transaction Pricing – No need for Ether/Gas to execute transactions.
- Permission Management – Limits participation to a known set of nodes that have to be provisioned to be part of the blockchain network.



### Quorum Blockchain Components

- **Transaction Manager** - allows access to encrypted transaction data for private transactions, manages local data store and communication with other Transaction Managers
- **Crypto Enclave** - responsible for private key management and encryption and decryption of private transaction data
- **Quorum Node** - voting-based, BFT-hardened consensus mechanism that utilizes core Ethereum features to verify and propagate votes through the network
- **Network Manager** - controls access to the network, enabling a permissioned network to be created
- **Constellation Network** – Private Smart contracts transmitted point to point so that only relevant parties receive them.

### Quorum works with existing Ethereum Tools

- Truffle Testing Framework
- Metamask Wallet and Gateway
- OpenZeppelin – Modular Reusable Smart Contracts
- Remix

### Security & Privacy

- Permissioned Network – Known Peers Only
- Quorum offers decentralized privacy - No dependency on a central node/service or external application to ensure privacy
- Single-chain architecture - Chain contains both public & private transactions guarantees privacy whilst ensuring better security
- Designed to meet regulatory requirements around in-country data & is compatible with next gen crypto primitives such as ZKP
- Leverages Baseline Protocol (using Zero-Knowledge Proofs) to allow access to public Ethereum network while keeping transactions private.

### Hosting

- Microsoft Azure