Blockchain and Web3 for Utilities

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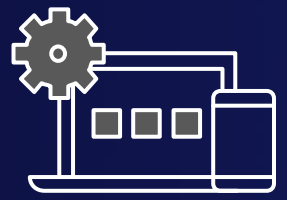
Blockchain Technology

What it is

Linked transaction data in encrypted, redundant databases, or ledgers, hosted across a network



What it does

Makes online transactions between third parties more secure and trustworthy

Lowers costs by eliminating the need for traditional intermediaries

How

Encrypted, redundant data prevents destruction or falsification of data in any single ledger

Who

No single entity controls the data, further reducing risk

Blockchain Technology

BLOCKCHAIN BRINGS KEY BENEFITS TO YOUR SYSTEMS

Multiple third-party entities are writing updates into the blockchain with the consensus of others

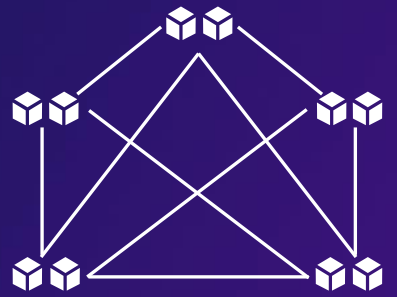
Smart contracts allow automatic integration of all data within the blockchain

All third parties are **equal players** within the network, requiring no intermediaries

Provenance of data

Disintermediation

Data management



Decentralization

Web3 Ecosystem

LAYER 3
Application

LAYER 2
Smart Contracts
Scalability
Efficiency

LAYER 1
Consensus
Compute

LAYER 0
Networking

DeFi

NFTs

Metaverse

GameFi

Layer 2 Blockchains

Infrastructure | Dev Tools | Identity |
Privacy & Security | Analytics | DAO | Wallets...

Layer 1 Blockchains

Processor | Memory | Nodes | Validators |
Mining

Interoperability | SDKs

Exchanges

Blockchain for Utilities

Blockchain can process and validate data from many devices at the grid edge before securing the data onto the blockchain.

Energy providers can utilize blockchain to create a system for transactions of data which is critical to distribution

Blockchain Impact on Upstream Oil and Gas Segments

Upstream requires the involvement of dozens of stakeholders, all of whom rely on the data provided by other firms. Blockchain technology optimizes for wide-scale, multi-party data coordination.

Blockchain Impact on Midstream Oil and Gas Segment

The midstream oil and gas segment can benefit from disaster mitigation and infrastructure maintenance. Blockchain technology excels at providing multi-stakeholder information sharing, especially for asset tracking.

Blockchain Impact on Downstream Oil and Gas Segment

Blockchain-enabled supply chains optimizes wide-scale and multi-product coordination with recording and tracking supply chains and reducing immense amount of waste.

Wholesale Energy Distribution

Blockchain technologies combined with IoT devices enables consumers to trade and purchase energy directly from the grid rather than from retailers.

By connecting users directly to the grid, blockchain allows users to buy energy from the grid at a cost they desire resulting in a more equitable and stable energy market with lower electricity costs

Peer to Peer Energy Trading

A peer-to-peer energy market is a shared network of individuals who trade and buy excess energy from other participants. Blockchain provides the perfect ecosystem of transacting partners

Electricity Data Management

Blockchain can provide consumers greater efficiency and control over their energy sources. The immutable ledger provides secure and real-time updates of energy usage data such as market prices, marginal costs, energy law compliance, and fuel prices.

Commodity Trading

Significant costs are required to maintain, update, and secure proprietary trading platforms. Commodities trading requires maintaining a massive ledger that records trades and commodity prices at specific moments in time.

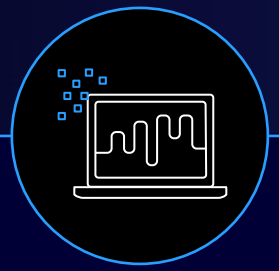
Immutability, security, and immediacy can all be programmed in the blockchain removing the slow adaptability of large scale proprietary systems.

AWS value proposition

Amazon Managed Blockchain

EASILY CREATE AND MANAGE SCALABLE BLOCKCHAIN NETWORKS

Fully managed



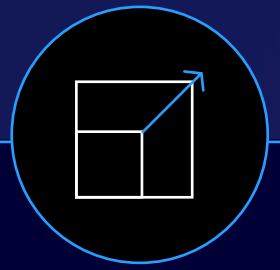
Quickly create blockchain networks that span multiple AWS accounts

Easily add or remove members and monitor the network

Choice of Hyperledger Fabric or Ethereum

Choose the right framework for your needs, whether you are building a permissioned or public network

Scalable and secure



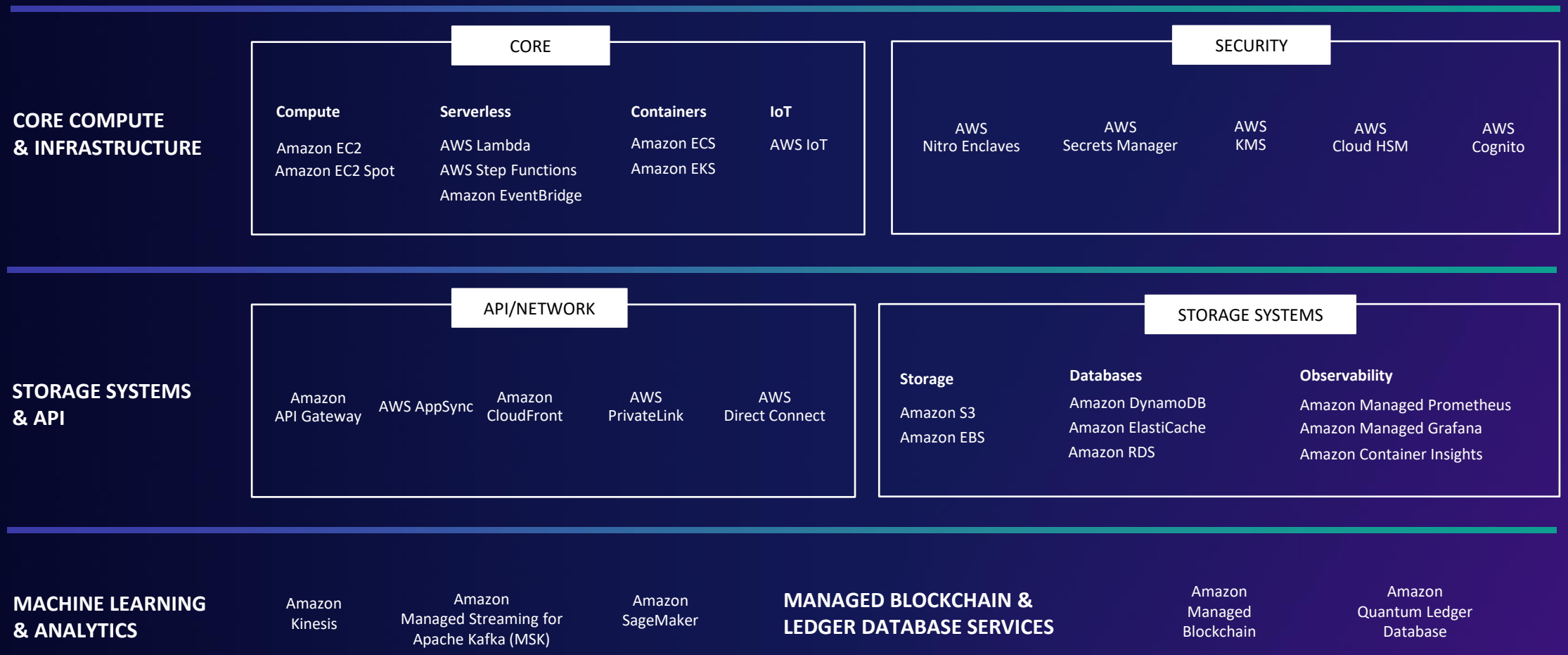
Easily scale your blockchain network as the usage grows

Managed Blockchain secures your network certificates with AWS KMS

Improves Reliability

Managed Blockchain improves the reliability of the “ordering service” by replacing the default technology with Amazon QLDB, which improves durability

Building blocks for Web3 & Blockchain using AWS Services



AWS drives growth with infrastructure, go-to-market support, and visibility with stringent security and compliance requirements

Make decisions faster with world-class infrastructure

With 200+ Services, AWS has the broadest and deepest solutions for Compute, Storage, Analytics, and AI/ML purpose built to suit the wide variety of Web3 companies' infrastructure needs. By 2025, All AWS Services will be powered by 100% renewable energy

Build GTM and partnerships across the Blockchain ecosystem

AWS has deep startup expertise for Blockchain natives and specialist teams dedicated to relevant industries in the ecosystem, including Fintech, TradFi, GameFi, Sports, and Media & Entertainment, built through years of partnering with organizations and investors globally

Go global and gain visibility in minutes

With a global infrastructure spanning 87 Availability Zones and 27 geographic regions, AWS enables Web3 companies to build and grow with high availability and reach

Strengthen security and compliance

AWS is designed to meet the most stringent security requirements and offers 15+ security services, including a comprehensive AWS Security Hub, to help customers build with confidence. AWS has 98 security standards, more than any other cloud provider

Hosting a blockchain node on AWS

DESCRIPTION

Blockchain nodes are critical to the decentralized structure of Layer 1 and Layer 2 blockchains. They sustain and secure the blockchain by storing a copy of the decentralized ledger and performing certain functions to validate the legitimacy of transactions.

AWS provides more than 275 instance types to optimize cost and performance to fit your specific nodes requirements. Companies can easily host a blockchain node on AWS and delegate it for on-chain activities including staking and analytics.

USE CASES

Layer 1 & 2 | Staking-as-a-service | On-chain analytics | Lower latency access

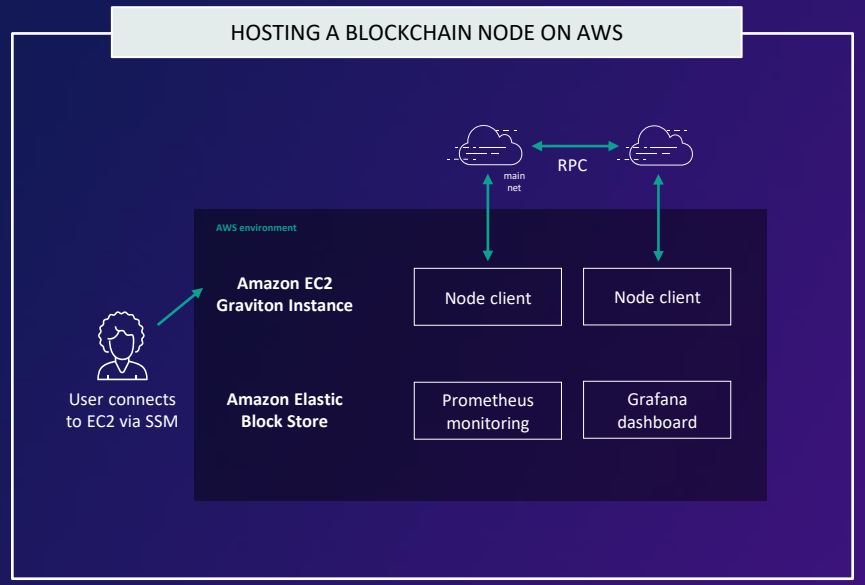
RELEVANT SERVICES

Amazon EC2

AWS
Nitro Enclaves

AWS Key
Management Services

AWS
CloudHSM



Securing Blockchain Wallet Keys

DESCRIPTION

There are architectural challenges and limitations to operate low-level tasks and manage access to private keys on public blockchains.

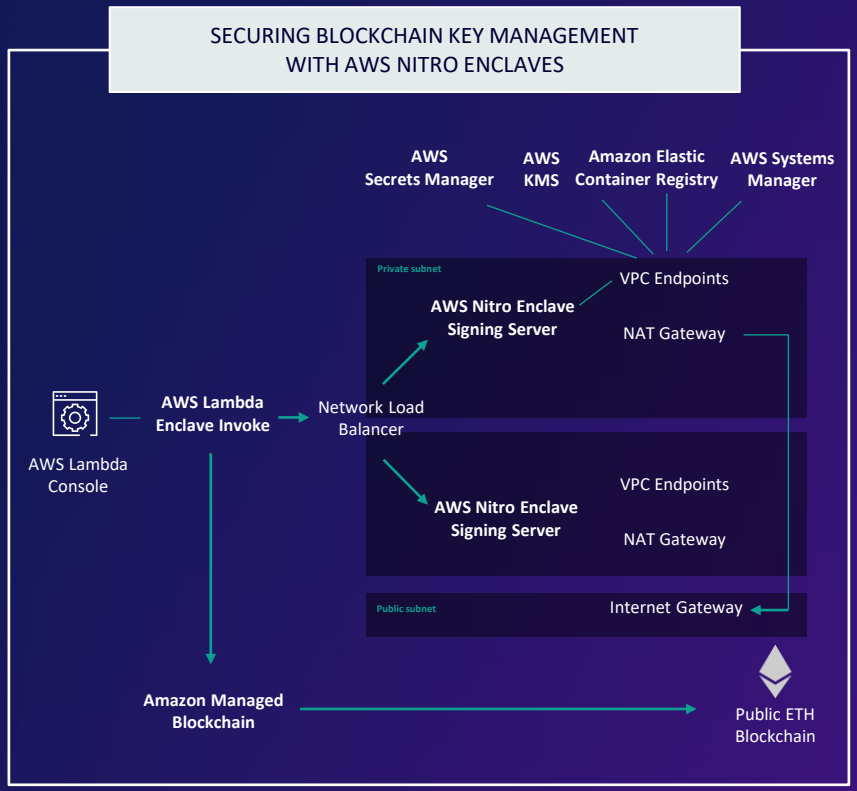
AWS Nitro Enclaves offers flexible support for low-level blockchain operations such as scaling out key management in a secure fashion.

USE CASES

Layer 1 & 2 nodes | Wallet-as-a-service | Custodians

RELEVANT SERVICES

- AWS Nitro Enclaves
- AWS Key Management Services
- AWS Secrets Manager
- AWS PrivateLink
- AWS Firewall Manager



Scaling blockchain applications through serverless infrastructure

DESCRIPTION

Developing Web3 infrastructure comes with evolving challenges, especially managing the backend system and applications at scale.

AWS serverless architecture enables seamless scaling by taking away the heavy lifting of infrastructure maintenance so you can focus on building what matters the most.

USE CASES

NFT minting | Token metadata | Web3 marketplaces | On-chain analytics

RELEVANT SERVICES

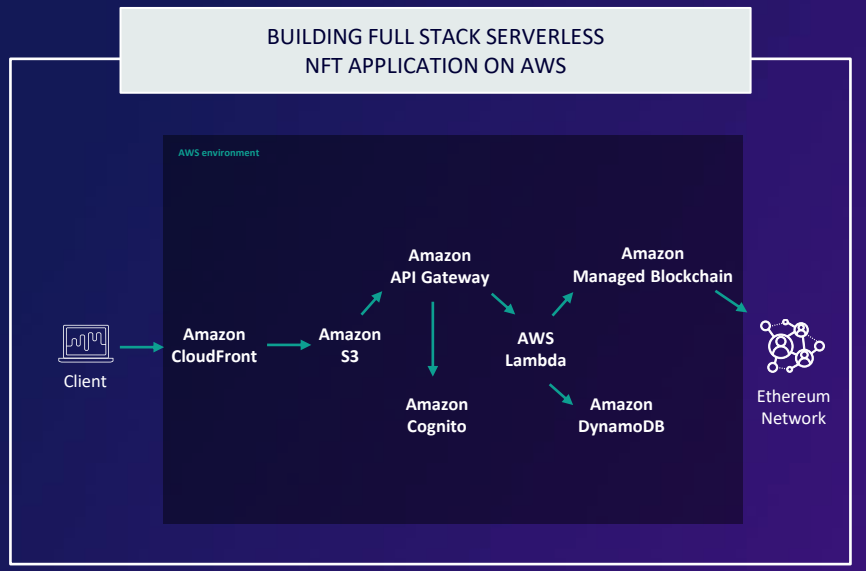
AWS Lambda

Amazon CloudFront

Amazon API Gateway

Amazon DynamoDB

AWS Fargate



Indexing, managing, and processing large volumes of data securely

DESCRIPTION

Off-chain data and computation are important to inform on-chain business insights and strategic decisions.

AWS Data Lakes and Analytics solutions make it easy to index, manage, and process large volumes of data off-chain for downstream analytics in a cost-effective and scalable approach.

USE CASES

Digital asset markets | CeFi/DeFi | Off-chain analytics | On-chain event monitoring

RELEVANT SERVICES

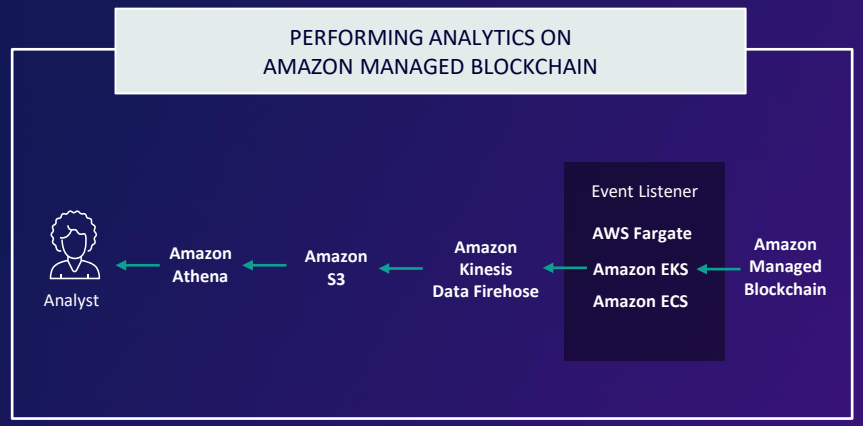
Amazon S3

Amazon EMR

Amazon API Gateway

AWS Glue

Amazon Athena



Questions?