Blockchain & Storage
Bridging the Gap

Karthik Rangamani

“Delivering exceptional customer-centric solutions across Digital, QA & Gaming”
Agenda

- Blockchain and DLT – A refresher
- Blockchain Trends and Storage
- Blockchain in Storage
- Q&A
Blockchain and DLT

- A **blockchain** is a decentralized, distributed ledger that is used to record transactions.
- Blockchain Network comprises of digitally recorded data in packages called Blocks.
- These digitally recorded “blocks” of data is stored in a linear “chain”.
- Each block in the chain contains transaction data which is cryptographically hashed.
Blockchain and DLT

A **distributed ledger** is a type of data structure which resides across multiple computer devices, generally spread across locations or regions.

Distributed ledger technology generally consists of 3 main components:

- A **data model** that captures the current state of the ledger
- A **language of transactions** that changes the ledger state
- A **protocol** used to build consensus among participants around which transactions will be accepted, and in what order, by the ledger
Cryptocurrencies - Blockchain

First Cryptocurrency
Launched in 2009
1 BTC = approx. USD7900

Cryptocurrency and Platform
Launched in 2015
1 ETH = approx. USD 250

<table>
<thead>
<tr>
<th>#</th>
<th>CRYPTO NAME AND PRICE</th>
<th>CAP MARKET</th>
<th>VOLUME TODAY'S</th>
<th>24H CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BTC Bitcoin</td>
<td>$7,895.70</td>
<td>$139.86B</td>
<td>$22.81B</td>
</tr>
<tr>
<td>2</td>
<td>ETH Ethereum</td>
<td>$249.44</td>
<td>$26.48B</td>
<td>$10.98B</td>
</tr>
<tr>
<td>3</td>
<td>XRP Ripple</td>
<td>$0.391212</td>
<td>$16.48B</td>
<td>$1.99B</td>
</tr>
<tr>
<td>4</td>
<td>BCH Bitcoin Cash</td>
<td>$405.47</td>
<td>$7.21B</td>
<td>$2.66B</td>
</tr>
<tr>
<td>5</td>
<td>EOS EOS</td>
<td>$6.17</td>
<td>$5.63B</td>
<td>$2.35B</td>
</tr>
<tr>
<td>6</td>
<td>LTC Litecoin</td>
<td>$90.08</td>
<td>$5.57B</td>
<td>$3.44B</td>
</tr>
</tbody>
</table>

© Indium Software
Storage & Blockchain

Blockchain Terminologies

- **Genesis Block**
  - the first block of a block chain.
- **Node**
  - Blocks of data are stored on nodes
  - Nodes form the infrastructure of a blockchain. All nodes on a blockchain are connected to each other
  - A full node is a device that contains a full copy of the transaction history of the blockchain.
- **Mining**
  - A process by which transactions are verified and added to the public ledger
- **Consensus**
  - Protocols that make sure all nodes are synchronized with each other and agree on which transactions are legitimate and are added to the blockchain.
- **Finality**
  - Affirmation that all well-formed blocks will not be revoked once committed to the blockchain.

© Indium Software
Blockchain Trends

Size of the Bitcoin blockchain from 2010 to 2019, by quarter (in megabytes)

Number of Blockchain wallet users worldwide from 1st quarter 2016 to 1st quarter 2019

Source: Blockchain © Statista 2019

Additional Information: Worldwide Blockchain 2010 to 2019
Blockchain Trends

**Ethereum Full Node Sync Default Chart**

Source: Etherscan.io
Click and drag in the plot area to zoom in

**Ethereum Full Node Sync Archive Chart**

Source: Etherscan.io
Click and drag in the plot area to zoom in

<table>
<thead>
<tr>
<th></th>
<th>Bitcoin</th>
<th>Ethereum</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Block</td>
<td>2009.01.09</td>
<td>2015.07.30</td>
</tr>
<tr>
<td>Blockchain Size</td>
<td>257.49 GB</td>
<td>240.63 GB</td>
</tr>
</tbody>
</table>
Sharding

- Split the state and history of the network into multiple partitions or shards.
- Each new transaction on each individual shard would change the state of that shard only.
- Every shard processes its own portion of the state of the network, which allows the system to process many transactions in parallel, thus significantly increasing throughput.
Blockchain in Storage
Storage - DeCentralization

- Data is stored on multiple computers that are hosted by the participants on the network.
- It is a P2P (peer-to-peer) decentralized storage solution.
- Files are protected with the help of cryptography.
- In decentralized network anyone can participate and become the member.
- Participants can be incentivized in cryptocurrency by sharing their unused disk space.

Storj is an open source, decentralized file storage solution that uses encryption, file sharding, and a blockchain-based hash table to store files on a peer-to-peer network.

Sia is a decentralized storage platform secured by blockchain technology. The Sia Storage Platform leverages underutilized hard drive capacity around the world.

Filecoin is an open-source, public, cryptocurrency and digital payment system. A blockchain-based cooperative digital storage and data retrieval method.

MaidSafeCoin (MAID) is the decentralized currency for the SAFE Network, a autonomous and decentralized data network that boasts extra hard disk space.
Questions
References and Further read

- https://medium.com/edchain/what-is-sharding-in-blockchain-8afd9ed4cff0
- https://bitinfocharts.com/
- https://medium.com/mechanism-labs/finality-in-blockchain-consensus-d1f83c120a9a
Mining Rig - Bitcoin