Blockchain for finance and banks
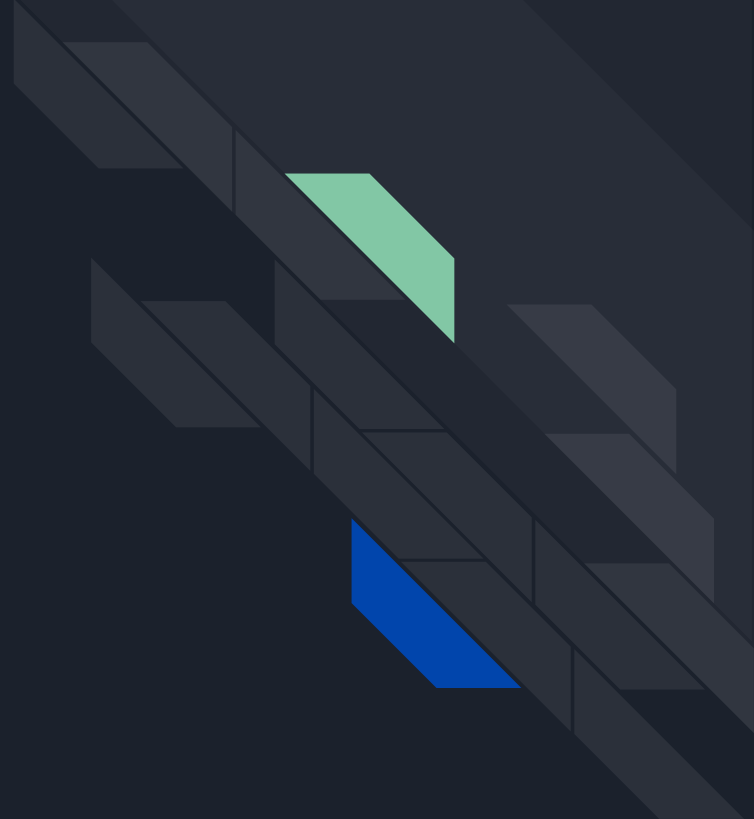
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Master : Distributed Information Systems Engineering and Security

Chaptre 04:
Peer-to-peer transfer

Introduction

- Peer-to-peer (P2P) networking stands out as a model where each entity serves as both client and server, diverging from the traditional client-server structure. It may be partially centralized, involving a central server, or completely decentralized, relying on direct connections among participants.

- In financial technology, P2P commonly refers to trading cryptocurrencies through distributed networks. P2P platforms enable direct transactions between buyers and sellers, eliminating intermediaries. This extends to P2P lending, where loan participants negotiate agreements directly online.

Function of P2P

- when a node acts as a client, it downloads files from other nodes on the network. Then, when it functions as a server, it becomes the source from which other nodes can download files.

- In practice, both functions can be performed simultaneously (for example, downloading file A and transmitting file B).
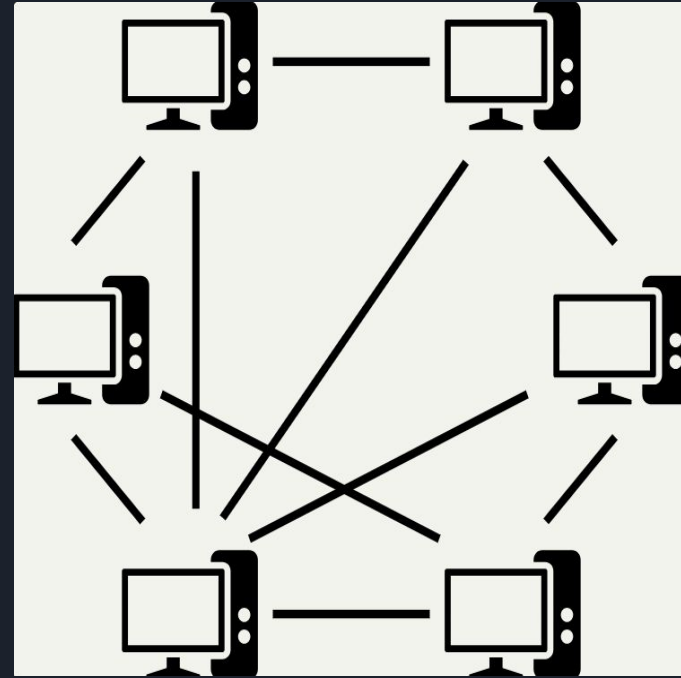
Examples of Peer-to-Peer (P2P) Services

❖ **Open-source Software**

Its core principle: **anyone can access, modify, and redistribute the source code**. This creates a powerful network of developers and users who contribute to the software's evolution, eliminating the need for a central authority.

From operating systems like Linux to web browsers like Firefox, countless examples showcase the power of P2P in open-source software.

❖ **File Sharing**

File sharing,An essential part of peer-to-peer (P2P) networks is a powerful tool with a complex legacy. It's a digital bazaar where uploaders and downloaders connect, swapping everything from music and movies to software and documents.

Examples of Peer-to-Peer (P2P) Services

❖ **Collaborative Computing**

In a peer-to-peer (P2P) network, participants can share their computing power directly with other network members. Peers make a portion of their processing power available to other participants without the need for central coordination by servers or stable hosts This allows for distributed and collaborative use of resources, maximizing their utilization and reducing the burden on individual peers or central servers

❖ **Blockchain technology**

Blockchain technology relies on a peer-to-peer (P2P) network, which is a decentralized communication model where nodes can communicate with each other without the need for a central server.Therefore, blockchain serves as a prominent example of a system that leverages P2P networks to enable decentralized and secure transactions

The future of Blockchain technology

❖ **Cyber security :** Blockchain technology is increasingly seen as a promising solution for enhancing cybersecurity. By recording and storing information about attacks on a blockchain network, security professionals can analyze attack vectors, identify patterns, and implement enhanced security measures.Blockchain technology offers several key benefits that can significantly enhance cybersecurity, such as data integrity and enhanced transparency . While there are challenges to overcome, such as the complexity of these technologies and the need for interoperability, the future of blockchain and AI in cybersecurity looks promising

The future of Blockchain technology

❖ **Governments :**
 may initiate the adoption of distributed ledger technology (DLT) systems to replace traditional paper-based systems. The future of blockchain in the government sector looks promising, with various potential applications and benefits. Some key areas where blockchain technology can be utilized include:

- **E-government:** Blockchain technology can improve transparency, accountability, and citizen participation in government services by securely storing and sharing data

- **E-voting:** Blockchain immutable and transparent nature can provide a secure and tamper-proof process for electronic voting, ensuring that votes cannot be fraudulently manipulated

Read more

The future of Blockchain technology

❖ **Finance – Banking:**
National cryptocurrencies represent another promising area in blockchain development trends.The future of national cryptocurrencies and their potential to operate in conjunction with traditional currencies is a topic of increasing interest. Central bank digital currencies (CBDCs) are being considered by many countries as a way to modernize their financial systems. These digital currencies could offer benefits such as increased transaction speed, reduced costs, and improved monetary policy transmission. Additionally, the use of blockchain technology in national cryptocurrencies can provide a secure and transparent platform for conducting transactions, as well as enable central banks to have more control over the circulating supply of money

The future of Blockchain technology

❖ **In the medical field:**

Blockchain technology holds significant potential for various applications in the medical field. Some of the key areas where blockchain can be utilized include:

- **Managing Patient Data:** Blockchain can be used to securely manage and share patient health records, allowing for the secure transfer of medical data between healthcare providers and patients

- **Overseeing Drug Supply Chains:** The technology can help in tracking the provenance and distribution of pharmaceuticals, thereby reducing the risk of counterfeit drugs entering the supply chain.

- **Verifying the Authenticity of Vaccine Shipments:** Blockchain can provide an effective tool for verifying the authenticity of vaccine shipments and tracking their distribution, thereby addressing concerns related to counterfeit vaccines.

As the technology continues to evolve, its impact on healthcare is expected to grow significantly.