Blockchain: Uprising the Data Security

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Abstract- **- Blockchain technology is uprising and gaining traction in this world of technology and is now used to solve a wide range of tasks. Blockchain technology is present in financial sector, IOT networks, crypto currency and in many other fields. If we see the security measures, blockchain itself vulnerable to lots of risk. As Blockchain contain confidential information about infrastructure and assets of specific user and business, providing extensive protection is important. Blockchain is already a secure mechanism but due to fast advancement in technology it must be updated with latest threats. However, this paper is going to show the role of blockchain technology to strengthen the various domain such as networking, Internet of Things, cyber security, financial and medical sector and also in other domains.**

Index terms- **Blockchain; Cyber Security; Secure Protocols; IOT; Networking;**
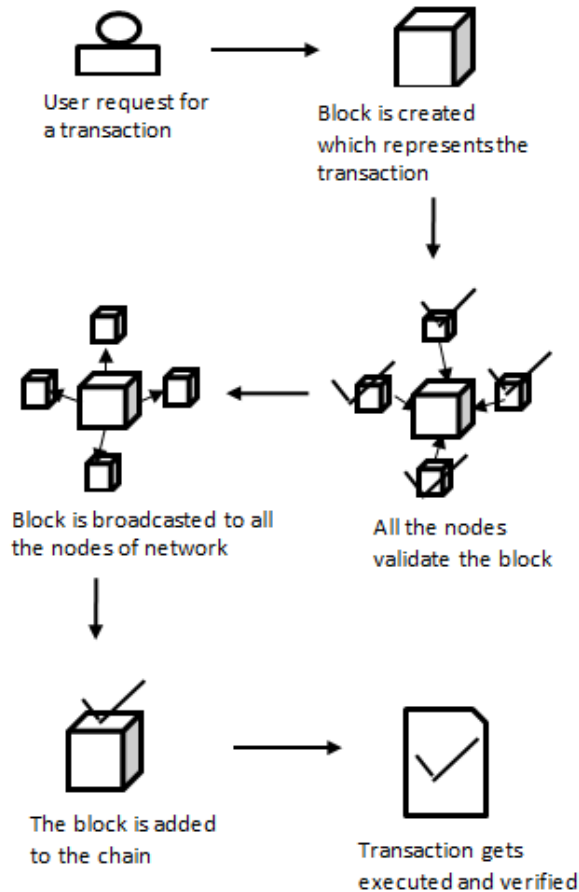
I.INTRODUCTION

The world is moving in the direction of digital era. Most of the things such as sharing of confidential information, transactions etc. become digitized. Due to the advancement in digitization the number of criminal activities also get increased in new digital ways. To protect from such harmful and criminal activities, new field comes which is latest security. It is the practice of protecting computers, unauthorized access and other attacks which leads to an exploitation. Today the cybercriminals become more advanced and capable to easily steal the data. Blockchain is the new technology based on the distributed database which is capable to change the way to secure or to protect the data. Owing to their distributed nature, blockchains provide no 'hackable' entrance or a central point of failure and, thereby, provide more security in comparison with various present database-driven transactional structures.[1]

II. ABOUT BLOCKCHAIN

In simple words, Blockchain is a collection of blocks. It is based on the linked list data structure. It is based on distributed ledger which records the transaction between two nodes efficiently which is permanent and easily verifiable. Blockchain will solely be updated by accord between participants within the system and once new information is entered it will ne'er be erased. it's a write-once, append-many technology, creating it a verifiable and auditable record of every and each dealings. Every dealings or digital event within the public ledger must be via the agreement of quite 1/2 those taking part within the network. This means that no participant or user as a private will modify any knowledge at intervals a Blockchain while not the consent of alternative users. It may be discovered clearly, that the technological idea behind the Blockchain is apparently closely the image of that of information. Working of blockchain is presented in Fig.1

1. Public Blockchain: Public blockchain is permission less. It is an open network system where all the devices can freely access without any kind of permission. This type of ledger is transparent and shared. There's no want for Associate in Nursing administrator. In effect, the blockchain users are the administrator.

2. Private Blockchain: Private blockchain is a permissioned blockchain. A user must be permitted by the blockchain authority before get access the particular network. On behalf of invitation user gets allowed. It allows firms to make and centrally administer their own transactional networks which will be used inter – or intra – company with partners.

User request for a transaction

Block is created which represents the transaction

Block is broadcasted to all the nodes of network

All the nodes validate the block

The block is added to the chain

Transaction gets executed and verified

III. BLOCKCHAIN WITH DISTRIBUTED SYSTEMS

Blockchain is based on the distributed system also known as ledger, which simply a database. Blockchain follows the decentralize network where none of the node is depend on the central server and none of the node have authority over the systems. Due to decentralized ledger hacker need to hack 51% systems which is only possible when all the 51% nodes are operated by the attacker itself. But in blockchain the identities are transparent, so it is not that much hard to catch the attacker.

IV. BLOCKCHAIN WITH CYBERSECURIY

Cyber security is the combination of various processes, technology stack, protocols and practices designed to provide security to networks, data and programs, either from attack or from unauthorized access. It is the form of measure while developing the applications. The whole process of securing, contains different types of assessments such as how to recover the system, various strategies and use cases. Blockchain and its component which provide the strength to the Cyber Security are as follows-

Cryptography – Cryptography means to convert the text into illogical text with the help of computation and the algorithm, so that if the attack has been done, the attacker not able to read it.

Hashing – Hashing is the advanced form of cryptography in which every time new text is generated which is always unique. Blockchain also using hashing to generate a unique hash for each and every transaction.

Hashing in Cryptocurrency - Hashing is used in the cryptocurrency. There is efficient use of hashing is done in cryptocurrency as hash is generated with the help of timestamp and timestamp returns the time in milliseconds so every time new hash code is generated which is impossible to crack it.

V. BLOCKCHAIN AND INTERNET OF THINGS

Blockchain technology helps plenty in establishing a sure and secure configuration for IoT devices. Approaches that appear relevant here are: Properties of IoT like Configuration details and also the last version computer code valid are often hosted on the ledger. throughout bootstrap, the blockchain node is asked to induce its configuration from the ledger.
The configuration is needed to be encrypted within the ledger to stop the invention of IoT configuration or its properties by analysis of the knowledge keep within the public ledger. The hash price of latest configuration file for each device are often hosted within the ledger. employing a cloud service the IoT device can need to transfer the most recent and sure configuration file when each fastened interval of your time.
Then the device will use the blockchain node API to retrieve and match the hash price, that is keep within the blockchain. this could permit the directors to get rid of any dangerous configurations frequently and revive every and each IoT device within the network with latest and sure configurations. Securing the network of IoT devices with a blockchain network

makes the system redistributed, during which there's no single authority which may approve any dealing. every and each device can have a duplicate of the ever growing chain of knowledge. this implies that whenever somebody desires to access the device and do some dealing, then all the members of the network should validate it. when the validation is completed, the performed dealing is keep during a block and is distributed to all or any the nodes of the network.

All this create the system safer and not possible for the un-authorized sources to breach into the protection. [2]

VI. BLOCKCHAIN IN FINANCIAL SECTOR

In a recent PwC report, it had been calculable that distributed ledger technology might cut back money services infrastructure price between US$15 billion and $20 billion once a year by 2022.

Accenture estimates that investment banks pay around simple fraction of their IT budgets supporting inheritance back-office infrastructure. Accenture outlines the subsequent blockchain enabled opportunities: Finance news prices might shrink by seventieth as a results of the optimized knowledge quality, transparency and internal controls; Centralized operations supporting functions like Know-Your-Customer and shopper onboarding might see prices reduced by five hundredth by the institution of a lot of economical processes; Business operations like trade support, middle office, clearance, settlement and investigations might see their operational prices being down by 600.

Human Capital Industry specialists additionally believe that between a pair of – 5 million jobs are lost to digitisation of finance, in line with a report by Citigroup. thirty % of banking jobs will be in danger. Automating the reconciliation and operations cycles alone would cause changes within the makeup and size of banking groups. New opportunities provided by Blockchain can cause huge reshuffles within the force.

The inefficiencies will be obvious. In the half-moon of 2018, Deutsche Bank denote internet profits of $146M. Profit points that leverage money inefficiencies are laborious ironed, and considering most of banking is affected by similar issues, this suggests that shareholders are pushing for fast changes.

Blockchain can disrupt and rework the manner we glance at them. technical school increased efficiencies can play an important role. Shareholders trying to maximise profits in the associate degree for more and more competitive trade that are searching for higher, faster, a lot of economical, and ultimately pass the savings to the trade and customers.[3]

VII. CONCLUSION

The integration of the blockchain and the security protocols have the tremendous capabilities to secure the systems over network. Blockchain is the technology which is able to provide us a single solution for information security. Instead of encrypting the data at the starting or at the end while making complete security. Blockchain provides security and protection against delinquent participant, safe and secure transaction surety etc. Blockchain provide the facilities to create the records immutable with the help of applications directly. Information present in a blockchain network can striking more belief for participants, because the limit of accuracy is higher than any centralized networks. This paper is presenting the different ways, how blockchain have a capability to strengthen the information security as well as in the other technology domains.

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