

Block Chain for the Internet of Things

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Abstract:- One of the key challenges to the IOT's success is how to secure and anonymize billions of IOT transaction and devices per day. Technologies based on block chain algorithms are disrupting today's cryptocurrency markets and showing tremendous potential, since they provide a distributed transaction ledger that cannot be tampered with or controlled by a single entity. Although the block chain may present itself as a cure-all for IOT's security and privacy challenges, significant research efforts still need to be put forth to adapt computation-intensive block chain algorithms to stringent energy and processing constraints of today's IOT devices. The topic of block chain for IOT, and present a research challenges.

Keywords : Internet of Things, Research, Challenges, Block chain, Security, Privacy

INTRODUCTION:

It is hard to mention a technology that will impact and benefit our lives more than the internet of thing(IOT). In a few years car, kitchen appliances, television ,smart phones ,intra-body sensor, thermostats We can imagine will be absorbed into internet and accessible from any where on the planet.

Over a last few years researchers have mainly focused their attention on addressing IOT's Computation and communication scalability issues key intuition to address the challenges above is to orchestrate IOT transaction in a decentralized fashion so that no single entity has control over them , As currently the IOT will implement a centralized , client- server based access model in which IOT transactions (i.e., data , money, or any other object of value)between IOT entities (i.e., any computing devices or stakeholder connected the IOT)is entrusted to monolithic ,centralized services providers.

To the end ,technologies and system based on the concept of block chain can have enabled the Cryptocurrency market ,and may prove crucial to achieve the stringent security and privacy goals of IOT.

What is a Block chain?

A block chain is defined as a peer to peer distributed ledger forged by consensus, combined with a system for smart contracts.

Originally block chain is a growing list of records called blocks ,that are linked using cryptography . each block contain a cryptographic hash of the previous block ,a time stamp and transaction data.

From a computational view point ,a block chain is a data structure where entries (also called blocks) are stored and linked to one another in sequential order. The concept of block chain is very similar to that of a linked list

Overview of Block Chain based IOT system :

In this section , we provide a survey of the most relevant block chain –based IOT systems investigated so far in literature . the most common IOT applications nowadays available, i.e.,

- Smart energy
- Smart environment
- Robotics
- Transportation
- Supply chain.

Block chain technologies for IOT:

The most important block chain technologies and features ,and we discuss their application to the IOT.

A) Smart Contracts:

One of the key challenges of the IOT is to enable and control autonomous and self-organized machine-to-machine communication.

B) Software and content validation :

The IOT system is well-known to be a heterogeneous environment where substantially different devices (in terms of hardware and offered services)interact with both users and other devices .

Block chain based IOT security:

Block chain technology has been foreseen by industry and research community as a disruptive technology that is poised to play a major role in managing, controlling and most importantly securing IOT devices .

- Background
- Potential block chain solutions
- Block chain and IOT related work.

Open challenges:

- Resources limitation
- Heterogeneous devices
- Interoperability of security protocols
- Single points of failure
- Hardware/firmware vulnerabilities
- Trusted updates and management.

CONCLUSION :

Today IOT devices are insecure and incapable of defending themselves. This is due to mainly the constrained resources in IOT devices .In this paper we survey and review main IOT security issues we consider the attack implication and map them to possible solutions proposed in the literature. We also discuss how the block chain can be used to address and solve some of most pertaining IOT security problem. The paper also outlines for open research issue and challenges that need to be addressed by a research community in order to provide reliable ,efficient ,and scalable IOT security solution .

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