

# Authox Protocol on BLE, NFC, Nearby

## Abstract

Authox is a framework for creating blockchain solutions which are scalable to a significant amount and enabling the ease of development of blockchain based solutions for the enterprise/developers/government organisations. This paper focuses on part of Authox protocol responsible for peer-to-peer communication and sharing information between devices using bluetooth low energy(ble), near field communication(nfc) and nearby apis.

## Keywords

Blockchain, Authox, BLE, NFC, Nearby

## Introduction

With the growing population of smart phones in the world, there is a huge demand of information exchange anywhere at any time using the smart phone. However setting up connection to the internet and sharing data is a lengthy process that is time consuming and above, connectivity is not essentially available all the time. Short range communication technologies like BLE & NFC are gaining much attention among smart phone application developers. These technologies can be easily integrated with other set of technologies, to create applications for information sharing. BLE based application have to pair the devices before actual information sharing can take place, whereas using NFC information can be shared without the requirements of scanning and pairing the devices. Only constraints these two near field communication technologies have is that the devices must be in range with each other and data should not cumbersome.

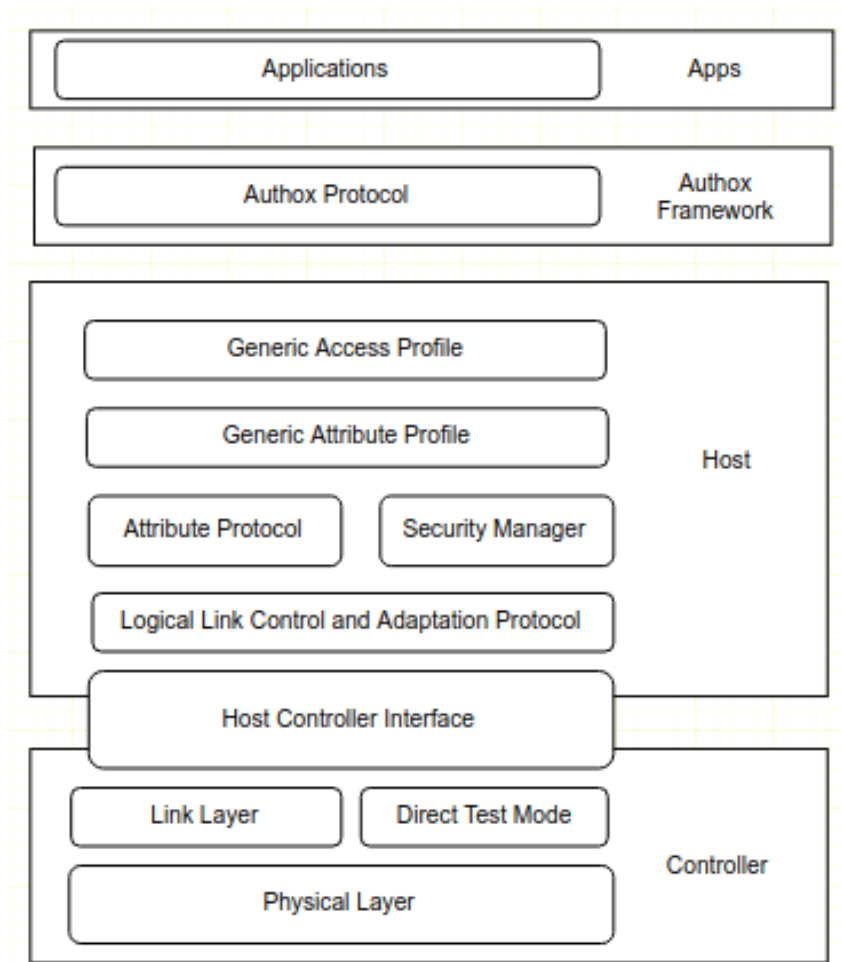
In this paper, we propose a protocol for mobile devices by which it can securely communicate with Authox Platform. Also intergartion of Authox protocol with BLE and NFC has been described for secure data exchange between devices, present paper highlighted the practicality of BLE, NFC for local communicationsand secure data exchange.

## Authox on BLE

Bluetooth Low Energy (BLE) gain high popularity due to their low consumption of energy. Devices using BLE emit advertisement packets at fixed intervals for a short durantion. Authox protocol using BLE aim to provide an accurate, low cost, energy efficient solution for peer-to-peer communication and information sharing. The advantage of this technology lies in its support for smart phones. We have implemented the Authox protocol for collecting data using ble and keep the transactions in the underlying distributed ledger. This process ease the process of information sharing and make it more secure by utilizing cryptography principles with distributed ledger technology.

Bluetooth is a wireless communication protocol that can be used to communicate to other bluetooth-enabled devices. Bluetooth has a client-server architecture, where client initiates a connection

request and server receives the request. BLE is a great for wireless communication as it is capable of transmitting data at nearly 1MB/s, while consuming very less energy. Using BLE we can easily estimate the receiver position according to the received signal power. In this paper we have explained how Authox protocol can be used with BLE as enabling technology for the information sharing system powered by distributed ledger technology.

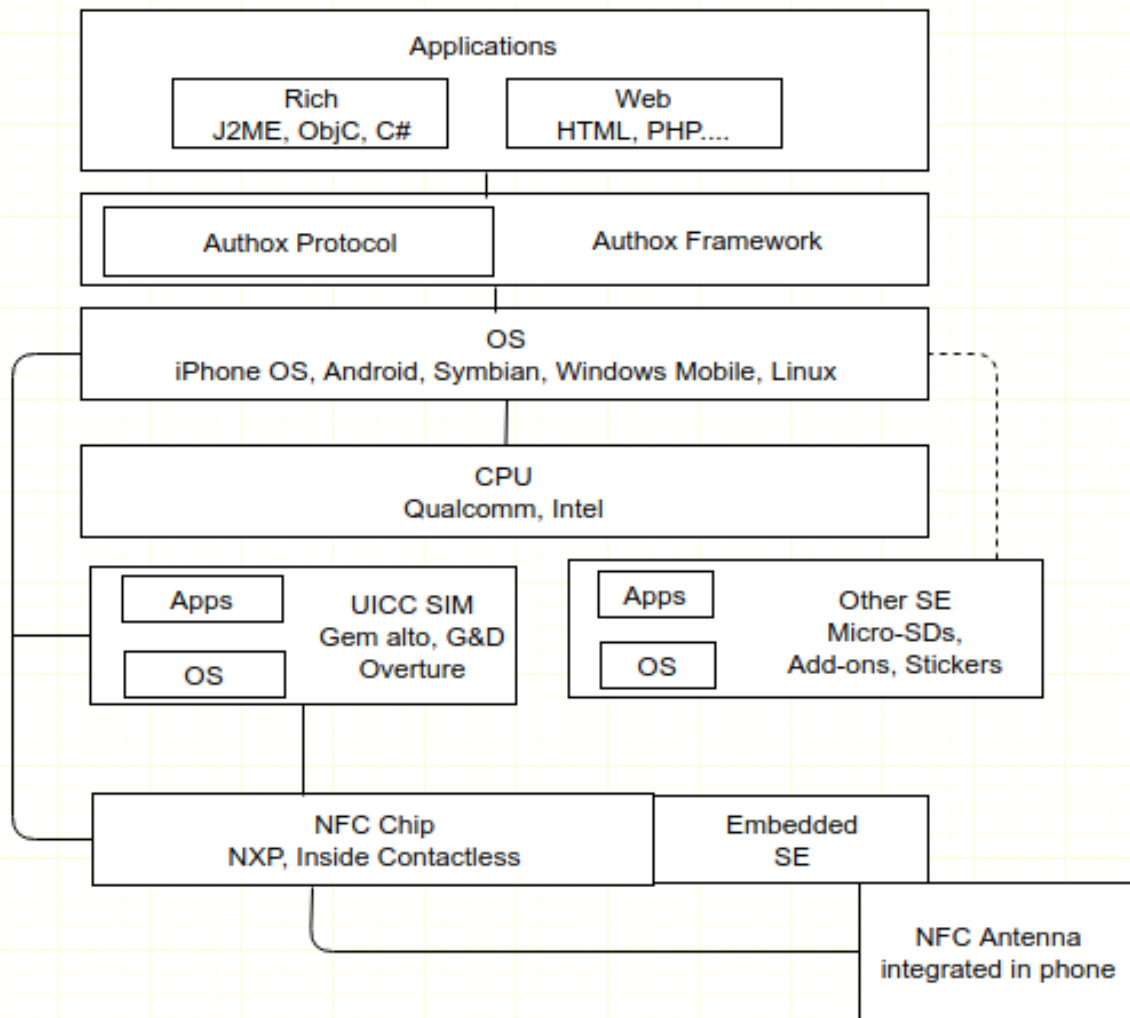


**Fig 1. Authox Protocol over BLE**

### **Authox on NFC**

NFC stands for Near Field Communication. It is a short-range radio technology that enables communication between devices that either touch or are momentarily held close together. NFC is a form of short-range wireless communication where: The antenna is much smaller than the wavelength of the carrier signal. The receiver is within the transmitter's near field. Thus NFC communicates either by a modulated electric field, or a modulated magnetic field, but not by radio (electromagnetic waves). Some mobile phones now use electric-field NFC (operating at a frequency of 13.56 MHz, corresponding to a wavelength of 22.11 m) for certain special. Present and anticipated applications include contactless transactions, data exchange, and simplified setup of more complex communications such as Wi-Fi Communication is also possible between an NFC device and an unpowered NFC chip, called a "tag.

Authox protocol intergration provides a secure layer for information exchange where all the transaction logs are stored in the distributed ledger.



**Fig 2. Authox Protocol over NFC**

## Conclusion

This paper explains the integration of Authox protocol with near field communication, bluetooth low energy technologies. Authox protocol along with NFC or BLE can be used to share the information in a secure environment and keeping the information exchange logs in the distributed ledger. The current architecture is designed so that it can be used to share any type of information and can be integrated with user applications easily. We also planning to extend the Authox protocol so that it can support all type of communications.