IJNRD.ORG **ISSN : 2456-4184**

INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG

An International Open Access, Peer-reviewed, Refereed Journal

Decentralised Web Hosting System using Blockchain

[1]Suryansh Singh, [2]Madhav Chandok, [3]Harshit Tyagi, [4]Vidyakar Jha, [5]Sachin Bansal

[1]Student, [2]Student, [3]Student, [4]Student, [5]Assistant Professor
[1]Department of Information Technology,
[1]IIMT College of Engineering, Greater Noida, India

Abstract: Every Business that currently running their services are required to provide their service to their customer with anytime availability but due to central storage system this property can't be practical in real life. In the era of web 2.0 every business is running over the internet and every customer are using the existing services by paying a price of their data which they can't control at all once it been public to the network, it's absolutely required to push our data on the network as a price to use services over the internet but are these data really safe out there? and the answer is no. Since all these problem of availability, data privacy and data control as well as authentication while staying pseudo-anonymous can be solved only via using the capability of web 3.0.

Web 3.0 is a new class of internet on its own where every user has the capability to control his own data while staying pseudo-anonymous. Web 3.0 is actually a vast concept of interconnection of various computer system so that every user can automatically interact with each other without being dependent on a central system and can control what they really want to show or send over this network. In this project we combine the capability of the Web 3.0 with new method for hosting simple Web-Apps which get transformed to D-Apps.

IndexTerms – **web 2.0, web 3.0, internet, central system, network, dapps, webapps**

1. INTRODUCTION

1.1 The Web:
During 1990`s web was got some consideration but however it's not much developed and hence every user can only read what a programmer has coded there in the web site, However this era of Internet comes to an end when back in 2006 Web 2.0 introduced basically when Facebook comes into the consideration and every user start posting their thoughts over the Facebook using internet this lead us to the web 2.0 where people start communicating over the network using a centralized server where they don't have the control of their data once published. This era of web 2.0 was known to be a revolutionary moment when organization start moving their physical offices over the internet every organization just moved there work over this network of web 2.0 as there cost of investment get lowered here and the profit margin get increased drastically.

1.2 The Problem:
However, after 2012 people start getting concern of their data because of large number of active seeders which can breach their data whenever they want.
But problem with the web 2.0 is not limited here if data is not surely secured in web 2.0 then there is a chance of central system failure which holds the responsibility to connect various user or clients over the internet and they also hold the vital data too, so once the centralized system gets shut all the services of an organization can get vanished and this could lead huge impact on a organization they could even lose billions of dollars at once.

1.3 The Solution:
All the above concerns lead us to a newer technology which was web 3.0 where everyone is independent and can control their data too.
So, our project uses the capability of web 3.0, with the help of blockchain where we can simply turn a web app to D-app.
app is simply a decentralized app which is broken down in segments and each segment and the whole segments are combined before presenting it to user and then user can simply use this D-app very easily and the most interesting thing is that even if some sub-services are not working in D-app still user can use the working parts of D-app as it's been a segmented app so functioning is independent on another segments.
But the question arises how these segments get linked here with each other for smooth functioning on any service,
So, the answer here is simple the Blockchain.
This trendy technology work as a backbone of web 3.0 service without this it's impossible to create a D-apps.
With Blockchain only we could only link each segment with each other and can have a peer-to-peer connection over the internet which eliminates the use of central system and client-server architecture.

2. NEED OF THE STUDY

Blockchain become very fascinating when we talk about cryptocurrency and all, but how blockchain works on crypto currency and how it's become trendy in web 3.0?

So in order to understand this we have to get know how blockchain originated, so back in when there was a rise in crypto currency and crypto is nothing but a virtual money or you can say a unit which can be used to buy or sell an assets over a network but this kind of transaction are not provided by any organization so here blockchain come into play blockchain helps us to resolve the problem where our assets is going and who can access it as everyone in this network are connected to each other and there identity is also hidden so in this peer-to-peer connected networks of node have three actors when a transaction take place so three actors are:

1) Seller
2) Buyer
3) Audience

Each actors have a record of value of the assets and this record are immutable to accept the integrity in this network. So blockchain technology used to create our own computer to work as a node in this network and it also help in communicating peered manner, So main origin of our project is originated from here only where we are not hosting any transaction rather than we are trying to remove the central system for deploying web apps and instead using our own computer system which work as node in a peered manner so that every node work as a server and user can use any functionality of web app even more than a 90% of web app is not working because the web app is stored using concept of blockchain and every block here is a segment of the whole web app and every segments are independent of each other.

3. RESEARCH METHODOLOGY

So far, it seems very complicated to implement such hosting system with the concepts of blockchain, however due to the architecture of hosting system it become easy to understand the implementation and working of this project.

The decentralized hosting system using blockchain can be divided into three major tasks, which are shown and explain below:

A. Access Layer:

This layer helps us to understand the difference between a web app and a D-app.

So basically whenever we try to write a code and then publish it over network we usually get access to this code using IP address where it has been stored or hosted but for humans it hard to understand the combination of [.dot] and numerical digits so we use a service known as DNS which stands for Domain naming system , it usually have an index table where every IP address over a class of network have been mapped with a understandable format specified with upper level domains like com, in ,org and etc.

Thus, similarly in D-apps as its data has stored in form of segments so it's not present in single IP address so in soch scenario where the data is not saved under the single IP address we use a service like ENS, it is stand for Ethereum naming system this helps us to map multiple IP address to single understandable form with a single extension or upper domain level [.dot]eth.

Right now, ENS are the only way to access a D-app.

B. Storage Layer:

Storing is the most crucial part of our project as we need to store different segments over different nodes over the peered network and this kind of storage where we store segments in different location with some common link to combine this segments required special storing system rather than normal GFS, So for out project we make use of Inter-Planetary File Storing (IPFS) system because it is open source free and have strict rules of security and controlling the stored data with authentication features also it created random number of replicas in case to backup data.

C. Communication Layer:

We know how to access our D-app using ENS and we also know how in backend the data are going to be stored in different nodes but there still one thing is missing as we still don't know how could we combine these data over the peered network and then deliver it to customer, because large organization can have thousands of nodes or even more so it will be difficult to store the information of D-apps segments and then to access those segments based on the information over those huge number of nodes.

Here we have a simple solution which is communication link between each node instead between user and node only.

So here it is required that our every node can communicate with each other but to do so we are required to use some authentication to get to know whether a node asking a data from another node is a part of our community or not this authentication and identification is handled along with communication by using a simple tool of block chain which is Hyper Ledger , there can be two hyper ledger based on the requirement permissioned or permissioned as these name clearly says one mean to have authenticate before having data and another can directly get data like in an open network respectively.

IV. RESULTS AND DISCUSSION

Since using the block chain as web hosting system led us to take us first step in web 3.0 environment, where we have control over our data and every can be anonymous to each other while authenticating them self.

Our project can covert a simple web app to a D-app which now can be accessed from anywhere any time without any fail and eliminate the old method of client-server architect.

So, it gives us a service over the peered network with the following capabilities which cannot be practical with old hosting methods these are:

1. True availability
2. True Backup plans
3. Data security and integrity
4. Authentication and authorization
5. True reliability
6. Ease of scaling features