DISTRIBUTED COMPUTING

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ABSTRACT

There are billions of computing devices in this world. While we can go on and try to make more and more powerful supercomputers at an exponential cost, it would make sense if somehow, all the computational power of existing 10+ billion devices which is un-utilized is somehow harnessed. That is why we proposed our Distributed Computing project. We will establish a grid of computing devices such as smart TVs, smart phones, PC's to solve complex problems such as mining cyber currencies, cracking encryption keys which would otherwise require a single powerful computer. This would utilize the idle devices in a combined and effective way.

Keyword: *JavaScript, PHP*

1. INTRODUCTION

1.1 Distributed Computing:

Ready access to large amounts of computing power has been a persistent goal of computer scientists for decades. Since the 1960s, visions of computing utilities as pervasive and as simple as the telephone have driven users and system designers. It was recognized in the 1970s that such power could be achieved inexpensively with collections of small devices rather than expensive single supercomputers. Interest in schemes for managing distributed processors became so popular that there was even once a minor controversy over the meaning of the word "distributed."

Increasing desktop CPU power and communications bandwidth has also helped to make distributed computing a more practical idea. Various vendors have developed numerous initiatives and architectures to permit distributed processing of data and objects across a network of connected systems.

The advantages of distributed computing with respect to traditional methods such as supercomputers and clusters are clearly visible. The image below shows how a distributed computing network fares with other methods to solve complex problems with respect to Cost, Scalability, Hardware requirements, Risk of failure, Maintenance, Obsolescence, Administrative support, Nodes

1.2 How it Works

A distributed computing architecture consists of very lightweight software agents installed on a number of client systems, and one or more dedicated distributed computing management servers. There may also be requesting clients with software that allows them to submit jobs along with lists of their required resources. An agent running on a processing client detects when the system is idle, notifies the management server that the system is available for processing, and usually requests an application package. The client then receives an application package from the server and runs the software when it has spare CPU cycles, and sends the results back to the server. If the user of the client system needs to run his own applications at any time, control is immediately returned, and processing of the distributed application package ends.

2. OVERVIEW

We will make a web based distributed computing application which would run on almost any device with a web browser. This would enable 10+ billion devices like TVs, Blu-ray players, mobile phones, tablets, PCs to contribute their computing resources to our distributed computing network. The list of works that they can contribute would be to mine the cyber currencies bitcoin or monero, which would be donated to social causes.

These tasks require high computational resources and can only be solved by supercomputers or clusters of computers. We will solve these problems using many devices which would distribute the problem and allow these devices to pool their resources. The pool would account for high computational computational power, and make the network scalable due to its distributed nature, so that is has low failure rate when compared with the other methods

## 3. SETUP

3.1 Taking in the concept -

The concept takes into consideration the various idle mobile devices such as smartphones, which are un-utilized. It also takes into account that a specific software is required for each platform to enable them to contribute to distributed computing. That is why we made a web based solution as almost all devices have a web browser and an internet connection.

3.2 Programming the sketch –

Using the languages Javascript, PHP and HTML, the structure of the website is being made. The website will contain links for different sections like "Mining Bitcoin", "Mining Monero", etc

3.3 Working of the setup –

1. The javascript module in the web application will do the processing required for doing the provided work

2. There will be buttons on the homepage to various sections which would include links to various js modules such as for mining monero, bitcoin, etc
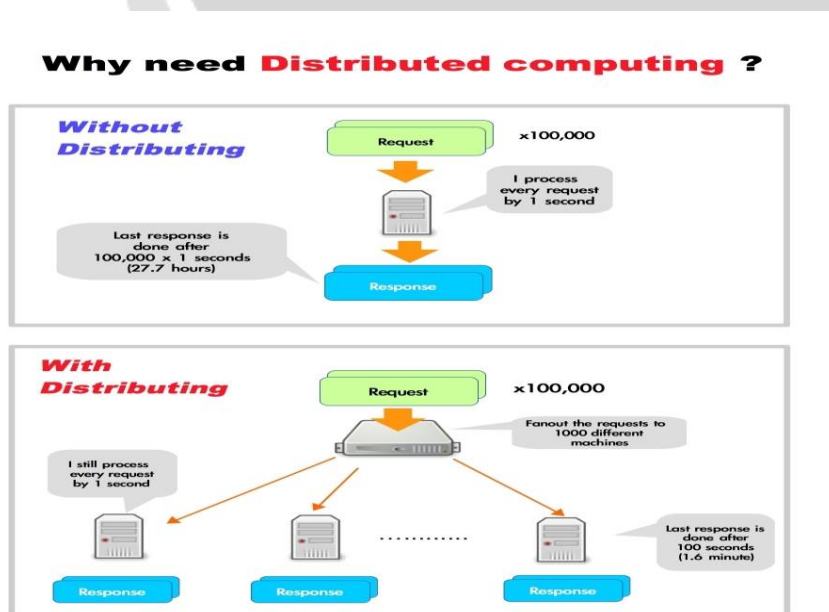
3. The page body of the site will contain other details like about the hash rate per second, number of hashes completed, the address of the wallet where the earnings are being stored, exchange rate of the cyber currency. The architecture of the website application can be easily understood using the UML Diagrams.

4. FUTURE ENHANCEMENTS:

1. We will never get away from how large data sets are becoming these days. With consumers creating so many different sets of data from purchase, viewing, or play history, we are all creating data at break-neck speed.

2. The needs for expertise in this field are deep: the process, escalation path, SLA's. The general "know-how" on how to get everything back up, triage, and solve tough problems. As a result, these Developer positions are always critical to any business or service that is online and has a large cloud infrastructure.

3. Building large-scale platforms to test or experiment these new features or services requires a special Developer who understands the importance of analysis and experimentation.

4. Companies will look for Developers to help them trim down latency: It's critical to ensure they have the top-of-the-line containers and equipment, and can focus on other efficiencies.

5. You want to create solutions to make sense of the data, isolate patterns or trends, and make business decisions based on the data you analyzed. It takes a Developer to create these elegant, scalable solutions. The demand for this type of Developer will continue to grow as the data, and demand for data analysis, grows.

5. CONCLUSION:

This project will have tremendous economic and environmental impact as it would lead to older devices being put to use for solving problems (hashes) and it would lead to more affordable cost for computing. It would also make the use of super computers isolated and reduce the economic and environmental impact it invites.

Scientists have always wanted more and more computational power to simulate complex models for genome analysis, physical models, cancer research, modus operandi of various viruses, etc. The credit for solving genome analysis can be credited to distributed computing but when more than 10+ billion devices can be utilized without any constraint on OS, CPU architecture of the device, a lot more can be done using our model of distributed computing.

6. REFERENCES:

[1] Need for Distributed Computing: Google.