INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 2026 – 2036
RECEIVED: 20-03-17. PUBLISHED: 09-04-2017

April 09, 2017

ENHANCED EARLY ATTACKS WARNING FOR DATA DETECTION USING QUANTUM BIT

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ABSTRACT

The objective of this project is to enhance the data storage security during disaster. Here, IaaS (Infrastructure as a Service) methodology will be implemented. This is to provide prior security for the storage devices during malware attacks and also during disaster. The remote monitoring system is growing very rapidly due to the growth of supporting technologies as well. And also problem that may occur in remote monitoring such as the number of objects to be monitored and how fast, how much data to be transmitted to the data centre to be processed properly. This study proposes using a cloud computing infrastructure as processing centre in the remote sensing data. This study focuses on the situation for sensing on the environment condition and disaster early detection. Where those two things, it has become an important issue, especially in big cities big cities that have many residents. This study proposes to build the conceptual and also prototype model in a comprehensive manner from the remote terminal unit until development method for data retrieval. We also propose using FTR-HTTP method to guarantee the delivery from remote client to server. In added with the remote monitoring system will keep on tracking the database architecture for the data transfer. Whenever destruction occur the data base architecture will transfer the database to the concern location assigned from the admin. So that data base can be saving exactly with the last fine transaction. Here data loss will not occur at any cost. This method is based on IP conflict procedure. So that roll backing process can also be possible. Using the same procedure of IP conflict method and this method will shows the data up to last minute transaction. Enhanced quantum cryptography has been used for encrypt the data during the time of data transaction. When a database has been encrypted using a quantum cryptography means, the DB could not access by third party.

Keywords: Disaster analysis, Remote Monitoring, Software engineering, Data processing, Quantum bit.

1. INTRODUCTION

As per survey most of the banking server and data centres are placed in metropolitan cities, most of the metropolitan cities are in sea shore. For example in India: Chennai, Mumbai and etc. Even in USA New York city is in sea shore only. For last 10 years tsunami destroyed the cities 3 times. In some case data centres may get destroyed due to earth quake or in flood. In our project we are finding out a solution to safe hand the data centres and banking servers. Basically massive computation power and storage capacity of cloud computing systems allow scientists to deploy computation and

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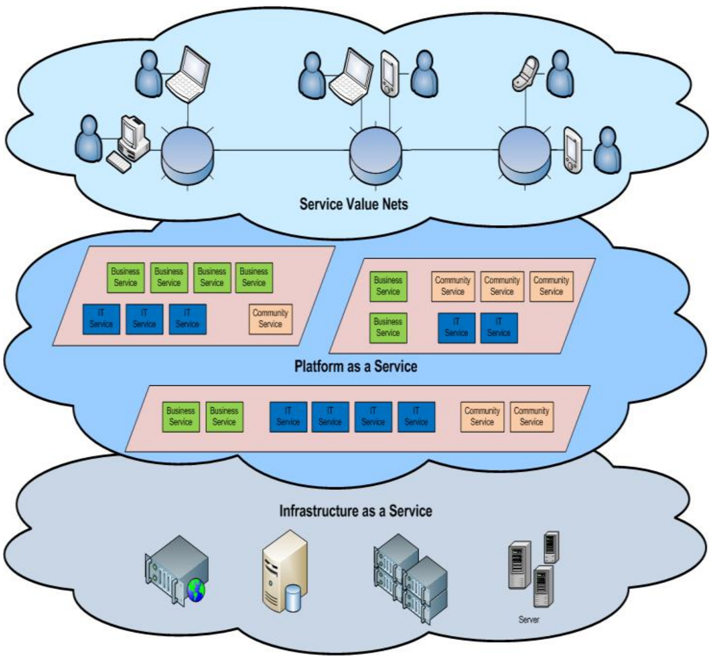
data intensive applications without infrastructure investment, where large application data sets can be stored in the cloud. However, they are either insufficiently cost-effective for the storage or impractical to be used at runtime. In this paper, toward achieving the minimum cost benchmark, we propose a novel highly cost-effective and practical storage strategy that can automatically decide whether a generated data set should be stored or not at runtime in the cloud. The main focus of this strategy is the local-optimization for the trade off between computation and storage, while secondarily also taking users' (optional) preferences on storage into consideration. Both theoretical analysis and simulations conducted on general (random) data sets as well as specific real world applications with Amazon's cost model show that the cost-effectiveness of our strategy is close to or even the same as the minimum cost benchmark, and the efficiency is very high for practical runtime utilization in the cloud.

Similarly, The rapid growth of communication technology has led to many data-intensive applications that produce huge volumes of data. Most of those applications are relying on data centre networks (DCNs) to store and process their huge data. Mean while, DCNs are vulnerable to potential disasters. Some recent natural disasters like 2012 Sandy Hurricane, 2011 Japan Tsunami, 2008 China Wenchuan earthquake, etc., which cause failures of a set of network components and Break downs of some DCNs. For example, China Wenchuan Earthquake in 2008 leads to the damages of over 60 enterprise DCNs and Japan Tsunami and earthquake causes the devastations often of DCNs. Thus, in order to improve the survivability of data in DCNs, the data should be backed up among geo-distributed DCNs . The disasters can be roughly classified into three categories, i.e., predictable disasters, unpredictable disasters, and human Made attacks, in which predictable disasters (e.g. hurricane, flood, and tsunami) can be forecasted before hand by atmospheric and environmental conditions. For a predictable disaster, we can obtain a nearly warning time for DCNs that will be affected by such disaster. Therefore, considering the newly-generated data that fails to be protected by regular backup in those DCN under risk during the early warning time, it is highly desirable that such data can be backed up in the other safe DCNs with in the early warning time such that the data loss is minimized under disaster.



To enhance the speed and storage capacity, Quantum Computing is introduced, Quantum Computing is not only increase the storage space but also increase the Data Transfer Rate. Quantum computing is used for increasing the quality of the software such as speed and increasing storage space by using the two states 0 and 1. During the disaster bulk data are transfer into secure network. For that to focus on the cloud network. Cloud Network is a collection of hardware, software and internet infrastructure. It renders three types of services such as Software as a Service, Platform as a Service and Infrastructure as a Service. IaaS (Infrastructure as a Service) methodology is to implemented here. This is to provide prior security for the storage devices during malware attacks and also during disaster.

2. LITERATURE REVIEW

1. [A.Bessani et al] describes the increasing popularity of cloud storage services has lead companies that handle critical data to think about using these services for their storage needs.

Medical record databases, power system historical information and financial data are some examples of critical data that could be moved to the cloud. However, the reliability and security of data stored in the cloud still remain major concerns. In this paper we present DEPSKY, a system that improves the availability, integrity and confidentiality of information stored in the cloud through the encryption, encoding and replication of the data on diverse clouds that form a cloud-of-clouds. We deployed our system using four commercial clouds and used Planet Lab to run clients accessing the service from different countries. We observed that our protocols improved the perceived availability and, in most cases, the access latency when compared with cloud providers individually. Moreover, the monetary costs of using DEPSKY on this scenario are twice the cost of using a single cloud, which is optimal and seems to be a reasonable cost, given the benefits.

2. [Bin Wanga and Shanghai] stated static routing Virtual Network information are pre-configured at each node. Two nodes can select different VLANs according to a wires bandwidth. In particular for a self learning routing scheme, its learning abilities are limited to a small topology network. The pre-configuration approach is only available for a small range of virtual Network, because the forwarding table entries of each switch have a limited size and massive amounts of Virtual Network information would exhaust the table capacity. The following table shows the DCN Architectures and the capability to forwarding table size.

S.No.	DCN ARCHITECTURE	MAXIMUM FORWARDING TABLE SIZE
1	Port Land	32 KB
2	VL2	16 KB
3	D Cell	2 KB
4	B Cube	2 KB

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Table 2.2 DCN Architectures and the capability to forwarding table size.

3. Algorithm for quantum computation: Discrete logarithm and factoring, Proc.

[P.W. Shor], Shor's Algorithm : Some algorithm utilizing the advantage of quantum computers. The polynomial – time algorithm factoring a large integer with $0(n^{3})$ time was proposed by Peter shor. This algorithm performs factoring faster than classical computer.

4. A short survey on Quantum Computers.

[**Y.Kanamori et.al]** This survey identifies the current approaches on quantum computer. There are five experimental requirements for building a quantum computer. First requirement is the ability to represent quantum information like qubit. Second, quantum computer requires the ability to set a fiducial initial state. Third, a quantum computer requires long de-coherence time much longer than the gate operation time. De-coherence is the cupling between the qubit and its environment. Fourth, is the capability of measuring output results from specific qubits. Fifth, requirement concerns the ability to construct a universal set of quantum gates.

4. PROPOSED METHODOLOGY

Quantum Bit Critical Path System

Disaster Analysis

Due to global warming our earth may face many types of disasters like earthquake, tsunami, storm, flood and etc. This disaster can be analysed through cloud remote monitoring. This research main function to capture data from sensor both in digital or analog input. Package of specific sensors with Remote Terminal Unit will be placed in some places or objects prone to disasters. Cloud computing could be proposed as central of data processing to run service like service listener. It has function to capture and store information sent from the remote client. Otherwise, it could be used for the central data storage and application server to display the processed results to the user.

Data preservation using cloud service provider

CSP deals with the software architecture of the cloud service provider, which is inter related with the remote disaster tool, so that when ever disaster will occur the cloud service provider will trigger out the malware process. This process may execute through Intranet, Internet and also through GPS. So that global communication will be possible here. This architecture should be assigned during the server configuration. The Cloud service provider will the triggering function with the TPA(Third Party Auditing). This method will take cares the database migration process. So that when ever disaster will occur the CSP will trigger through the IP conflict and the data base will be restored in the concern location assigned by the admin. Admin can customize the database by providing priority to the table sets. The transfer will works according to the assigned priority with the quantum cryptography. This saves the database from data loss. The next process will execute after the disaster and CSP trigger out process. The roll back process too needs IP conflict procedure for analysing the failure calculation as the location of the database. According to the admin request original database can be transfer to the default location and also transfer of duplicate database also possible.

ALGORITHM

Quantum part: Period-finding subroutine

The quantum circuits used for this algorithm are database designed for each choice of N and the random a used in f(x) = a^x mod N. Given N, find Q = 2^q such that $N^2 \leq Q < 2N^2$, which implies $Q/r > N$. The input and output qubit registers need to hold superpositions of values from 0 to Q − 1, and so have q qubits each. Using what might appear to be twice as many qubits as necessary guarantees that there are at least N different x which produce the same f(x), even as the period r approaches N/2 and database corruptions.

Proceed as follows:

1. Initialize the registers to

$$Q^{-1/2} \sum_{x=0}^{Q-1} |x\rangle \, |0\rangle$$

where x runs from 0 to Q − 1. This initial state is a superposition of the

corresponding database of Q states.

2. Construct f(x) as a quantum function and apply it to the above state, to obtain

$$Q^{-1/2} \sum_{x} |x\rangle \, |f(x)\rangle \, .$$

This is still a superposition of Q states.

3. Apply the quantum Fourier transforms to the input register. This transform (operating on a superposition of power-of-two Q = 2^q states) uses a Q^{th} root of unity such as $\omega = e^{2\pi i/Q}$ to distribute the amplitude of any given $|x\rangle$ state equally among all Q of the $|y\rangle$ states, and to do so in a different way for each different x:

4.

$$U_{QFT} \, |x\rangle = Q^{-1/2} \sum_{y} \omega^{xy} \, |y\rangle \, .$$

This leads to the final state

$$Q^{-1} \sum_{x} \sum_{y} \omega^{xy} \, |y\rangle \, |f(x)\rangle \, .$$

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This is a superposition of many more than Q states, but many fewer than Q^2 states.

Although there are Q^2 terms in the sum, the state $|y\rangle\, |f(x_0)\rangle$ can be factored out whenever x_0 andx produce the same value. Let

$\omega = e^{2\pi i/Q}$ be a Q^{th} root of unity,
r be the period of f,
x_0 be the smallest of a set of x which yield the same given f(x) (we have $x_0 < r$), and
b run from 0 to $\lfloor (Q - x_0 - 1)/r \rfloor$ so that $x_0 + rb < Q$.

Then ω^{ry} is a unit vector in the complex plane (ω is a root of unity and r and y are integers), and the coefficient in the final state is $\sum_{x:\, f(x)=f(x_0)} \omega^{xy} = \sum_b \omega^{(x_0+rb)y} = \omega^{x_0 y} \sum_b \omega^{rby}.$

Each term in this sum represents a different path to the same result, and

quantum interference occurs—constructive when the unit vectors ω^{ryb} point in nearly

the same direction in the complex plane, which requires that ω^{ry} point along the

Positive real axis.

5. Perform a measurement. We obtain some outcome y in the input register and in the output register. Since f is periodic, the probability of measuring some pair y and is given by

$$\left| Q^{-1} \sum_{x:\, f(x)=f(x_0)} \omega^{xy} \right|^2 = Q^{-2} \left| \sum_b \omega^{(x_0+rb)y} \right|^2 = Q^{-2} \left| \sum_b \omega^{bry} \right|^2 .$$

Analysis now shows that this probability is higher, the closer unit

vector ω^{ry} is to the positive real axis, or the closer yr/Q is to an integer. Unless r is a power of 2, it won't be a factor of Q.

6. Perform Continued Fraction Expansion on y/Q to make an approximation of it, and produce some c/r′ by it that satisfies two conditions for the location identifiers

A: $r' < N$
B: $|y/Q - c/r'| < 1/2Q$.

By satisfaction of these conditions, r′ would be the appropriate

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period r with high probability.

7. Check if f(x) = f(x + r′) $\Longleftrightarrow a^r \equiv 1 \pmod{N}$ If so, we are done.
8. Otherwise, obtain more restore for r by using values near y, or multiples of r′. If any attacks works, we are done.
9. Otherwise, go back to step 1 of the subroutine.

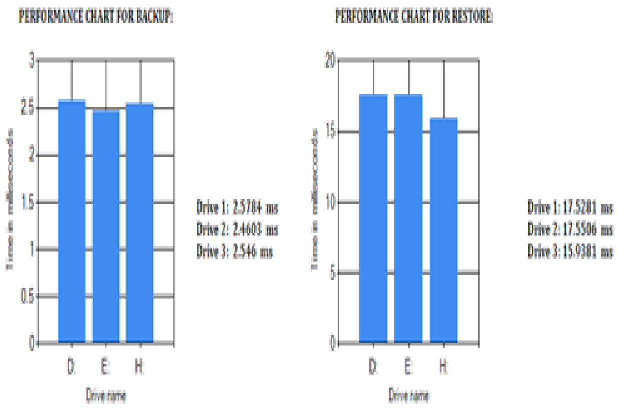
QBCP SYSTEM

- Because of the availability of cloud service provider the cloud disaster remote monitoring system able to executes successfully.
- High data transfer is possible due to the availability of higher bandwidth. So that while disaster data loss will not occur.
- A highly prioritized database is available in order to prior up the data base tables during the time of destruction.
- The system is not response for the hacker or the intruder, this is because the data base will be embedded with the IP conflict procedure. So that authorized IP can do the read, write and update permission of the database. Other person has not able to use. Hence as hackers are not able to view our files.
- More data accuracy provided during roll back process.
- Can provide unlimited bandwidth for data transfer.
- It Reduces the Backup and Restore time.

IV RESULT AND DISCUSSION

This result, is analysis with various discussions. It deals with performance back up timing, performance of restore timing Network Method and Quantum Bit Critical Path Method. It also describes, overall performance, overall available data and comparison between these Methods. This session deals with performance of back up timing, performance of restore timing, overall performance, overall available data chart and comparison chart.

PERFORMANCE METRICS



Performance of backup and restore

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According to the performance metrics, the data will be transferred to a desired three locations for back up. At the time of back up the database will be partitioned and start to splitting up. At that time the speed is depends on the hardware and the receiving point's configuration. The same process will be reversed for back up process. But according to the result back up takes less time then restore. This is because back up is working under a emergency situation, but restoring works on relaxing situation.

Drive	Back up in seconds	Restore in seconds
D	2.5784	17.5281
E	2.4603	17.5506
H	2.546	15.9381

Overall Performance chart for Network and QBCP Method

N/WMethodQBCP Method

In the Network system a basic network model has been implemented to back up the database in case of emergency situations. In the Network method there is no partition technique has been implemented as well as no other data techniques has been implemented. Our Quantum Bit Critical Path system contain some data management techniques and data partition technique, the system shows more performance than the Network system.

Over all Comparison	Time in seconds
Network Method	22.5784
Quantum Bit Critical Path Method	17.5506

This result shows overall improvement in the current system. And proves the Quantum Bit Critical Path architecture is better than the Network Architecture. Our Quantum Bit Critical Path architecture

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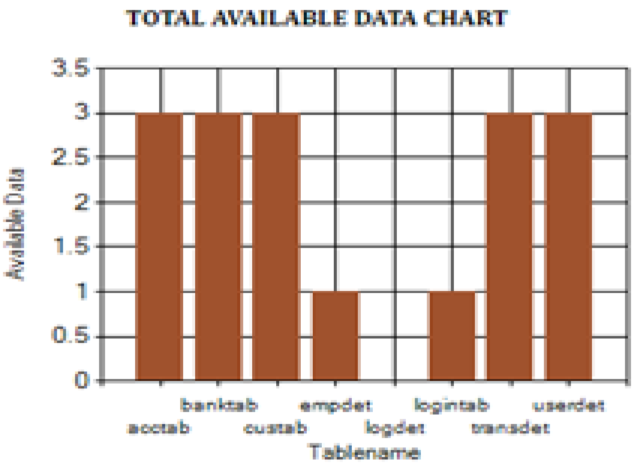
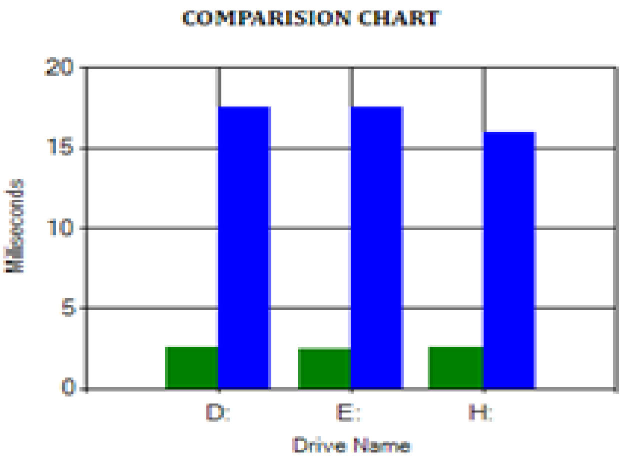
approach incurs about 70 % to 90 % Performance efficiency. As per the previous study, it incurs about 63% to 89% for both cost and performance.

Overall Available Data



The above mentioned chart shows the available data after the restorations. This calculation will be done to calculate the data loss. The fact in the calculation is to shut down the system during the time of data transfer. Practically this is not possible in research works. This could be only possible at the time of disaster. As well as the system works well and during the time of recovery and during the time of execution to get the entire data back without any data loss.

Overall Comparison Time between Backupkup and Restore Time Millisecond



Drive	Back up in seconds	Restore in seconds

D	2.5784	17.5281
E	2.4603	17.5506
H	2.546	15.9381

And finally, after all discussion the above mentioned chart shows the overall comparison between the backup vs restore. The result shows there is lot of difference between the backup and restore. This is the success of this research work and hence it proved how the system works on the emergency situations, in order to safe hand the most important data. But the restore is not an emergency process. Data integration and verification is the most important factor in the restoring process.

CONCLUSION AND FUTURE WORK

In this paper, we propose an effective and flexible distributed scheme with banking application and explicit dynamic data support to ensure the correctness of user's data in the cloud. This construction drastically reduces the communication and storage overhead as compared to the traditional replication-based file distribution techniques. By utilizing the homomorphism token with distributed verification of erasure-coded data, our scheme achieves the storage correctness insurance as well as data error localization: whenever data corruption has been detected during the storage correctness verification, our scheme can almost guarantee the simultaneous localization of data errors, i.e., the identification of the misbehaving server(s). It is concluded that the application works well and satisfy the owner and customers. The application is tested very well and errors are properly debugged. The site is simultaneously accessed from more than one system. Simultaneous login from more than one place is tested. The project works according to the restrictions provided in their respective browsers. Further enhancements can be made to the application, so that the web site functions very attractive and useful manner than the present one. The speed of the transactions become more enough now.

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