

IMPLEMENTING DYNAMIC CONFIGURATION TO IMPROVE THE QUALITY OF SERVICES IN CLOUD COMPUTING

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ABSTRACT

I am to present the dynamic Configuration and dynamic linking of a Cloud. Day by day tremendous increase of users and usage has raised a question to the security of Cloud. Dynamic Configuration is a technique which increases the security by providing various server addresses and linking the request of the client to each Cloud. This increases the speed as well as security. My research introduced a new technique of configuration and setting up a Cloud. I have used the concept of dynamic IP Address while linking the Clients request to the server. The Entire configuration and setting is done on private Cloud .There are various levels of network protocol in the private cloud considered in our research.

Keyword : - Virtualization, Dynamic Configuration, Cloud Security, Dynamic linking, Cloud Services

1. INTRODUCTION

Cloud Computing has become the base of Computer Science. It is a technology which rules the computer system by making use of the resources like networking, hardware and Application. It has attracted millions of users and motivated the users to store their data online. Since the data is stored on platform which can be reached by everyone and is globalize, high security is needed to store the data. We randomly use password and other locking system to make our data secured but that provides security just to keep one calm. I have introduced the technology of Dynamic Configuration which provides security in a sharp way to the services provided by the Cloud. I have divided my work four modules. Module 1 is to collect the preview of the Cloud Services and Security Issues .In module 2 – I have introduced Dynamic Configuration and Linking to the world of Cloud Computing. The third module of my work has been divided in three tier .Tier 1 describes the working and implementation of Dynamic configuration on IAAS. Tier 2 shows the implementation on PAAS and Tier three describes the same on SAAS. The fourth and final module combines the three services and forming the Cloud and the final Implementation is described. My work flow is shown in the figure 1.1.

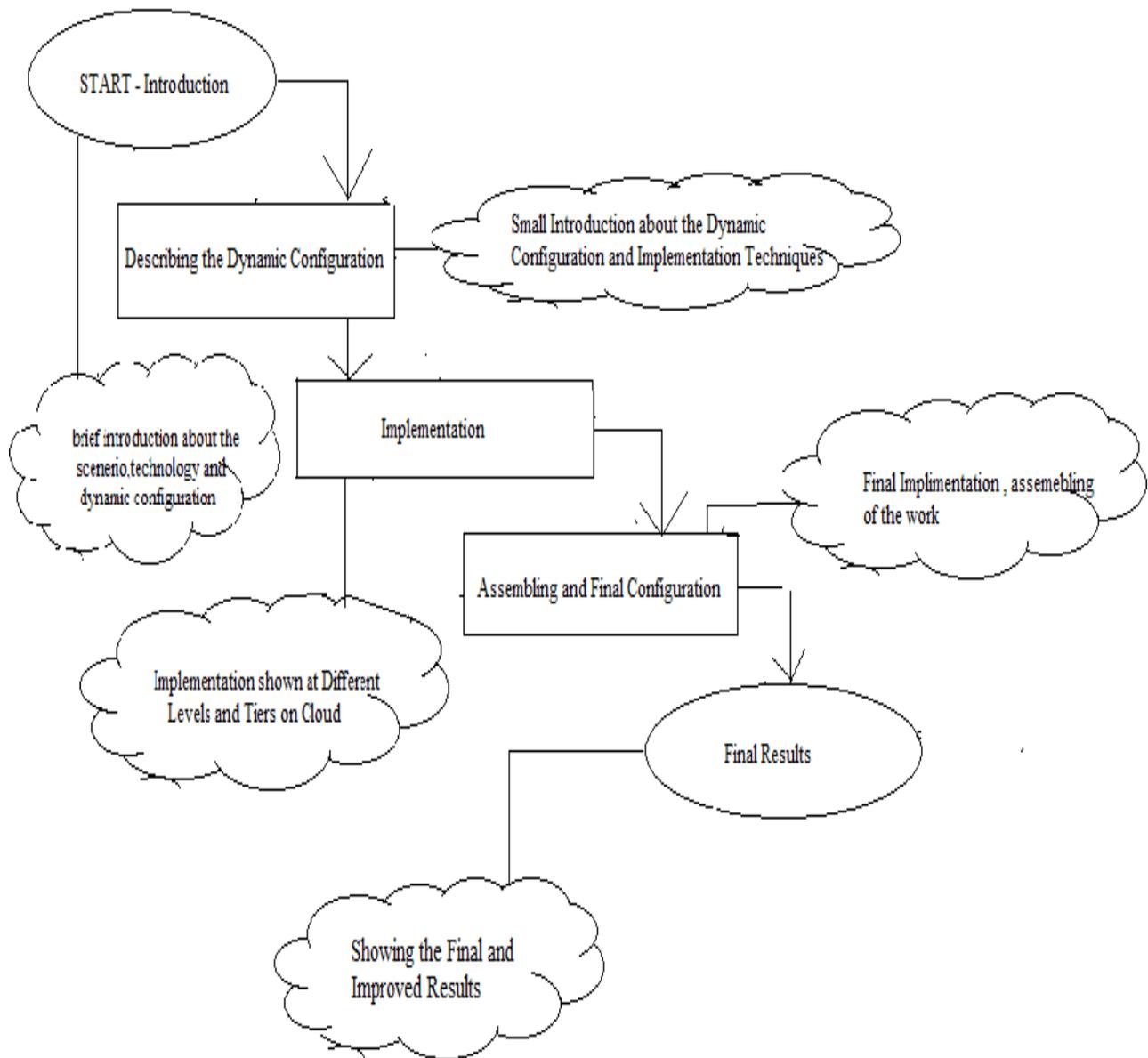


Fig. 1.1 Work Flow

2. PRIVIEW

Due to the unprecedented success of internet in last few years, computing resources is now more ubiquitously available^{[1][5][7][8]}. And it enabled the realization of a new computing concept called cloud computing .Cloud computing Environment requires the traditional service providers to have two different ways. These are infrastructure and service providers. Infrastructure providers manage cloud platforms and lease resources according to usage. Service providers rent resources from infrastructure providers to serve the end users. Cloud Computing has attracted the giant companies like Google, Microsoft and Amazon as a great influence in today’s Information Technology industry.^{[4][7][8]} Although Cloud Computing has shown considerable opportunities to the IT industry of today’s world, but still there are a number of challenges that require to be carefully addressed. We have practical

example of Google which has used expert based techniques to search the database of a Cloud. Our survey in Cloud computing found that implementation of expert system techniques would bring a new revolution in the world of technology. Implementation has been made previously but we lack quality of services.

Cloud Computing has gained its importance due to the reason that it has globalized the technology .For Example: when a person travels on a train, he don't need to own a train but he just needs access to his seat for which he buy the ticket. Buying the complete train is not possible but getting a ticket satisfies his need .Cloud Computing follows the same trend as it capsules the technology and make it public giving access to every user.

1. **Globalization of Technology**^[8]: It proceeds on the concept that there are many things in this world which cannot be bought but are needed on the individual basis. A person who needs milk need not own a cow in a similar way a person using his Gmail account need not own the Gmail server.
2. **Privacy**^[9]: Every individual in this world needs privacy. He needs to keep his secrets as secured. The things owned by the user in this technology can be considered as personal with access to his personal documents. He has the full privilege to change, edit, modify or delete the account. He becomes the owner of his account.
3. **Sharing / Networking**:^{[8][9]} The user of this technology wishes to communicate the other users and as per his wish he can share some data which he needs can be published.

3. INTRODUCTION TO DYNAMIC CONFIGURATION

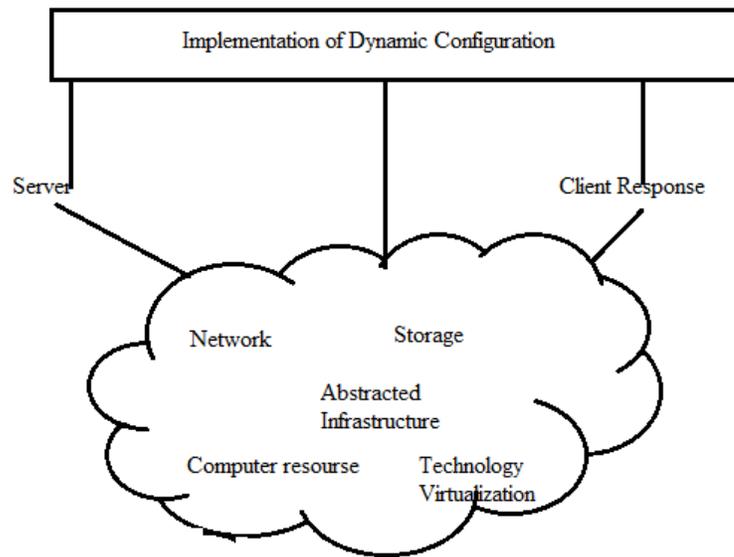
When we talk about the configuration we have two types of configuration Dynamic and Static. Till now we have been using static configuration which defines use of resources and designing system with fix configuration. Static configuration includes just one connection^{[11][12]}. In the practical sense we just have one IP address where all the users are forwarded and this leads to increase in traffic and weakens the security level. Hackers are aware of the technique which is being used and several cases of hacking have been heard in recent times. In static configuration we may have different levels but the connection type fix which invites the hackers in a easy way.

My effort is to provide a secured^{[12][13]} system which has better quality and high speed. I have introduced the term Dynamic configuration which is practically tough and need more man powers to develop. Dynamic configuration is a person having more than one residence and keeping all the resources and needy things at all the places. This increases a bit of cost but is highly effective in terms of speed and security. In recent times uses of internet have increased tremendously .People store their documents and files online .By use of this users need not to carry anything with them they just need internet from where they can download their documents. Users who just use the resources in their convenient way without thinking about the risk .My research work has brought the risk reduction techniques and resulted in better quality and security.

4. IMPLEMENTATION

In the implementation module I have divided my work in three tiers.

Tier 1 Implementation: IAAS (Infrastructure as a Service) as we all know that it provides abstracted infrastructure .IAAS consists of Storage , Network, System Configuration. Implementation of Dynamic Configuration refers to random changes in the internal Infrastructure of IAAS. Random changes leads to quick response from the Server to the Client. Different Client have different request .Dynamic Configuration forwards the Clients request to the section where there are enough resource and Infrastructure according to the demand of the Client. This prevents the system from entering a Deadlock phase and it helps in traffic handling. The Fig. 4.1 shows the implementation of Dynamic Implementation of IAAS.



Dynamic Changes are accepted for IAAS i.e internal Infrastructure

The parameters of IAAS that are considered in this are Variable Network with different Storage Location as per the orientation of connection, abstracted Infrastructure. Dynamic handling of Network specify more than one network connection and the packets follow the path with strongest connection and least traffic. With each connection is associated with the storage capacity and structure. The packets will follow the same store Capacity which is associated with that particular network.^{[14][15]} Abstracted infrastructure consists of the processor storage capacity and internal connection. This refers to speed of the processing the request of the client. Dynamic configuration affects each parameter of IAAS and enables it to change the connection part and storage structure and dynamically use the structure. Comparing it with static structure which we have in the current technology does not allow such type of facility.

Tier II Implementation : PAAS (Platform as a Service) is the Second important factor in Cloud Technology. It provides a platform for the user and the user pays according to his usage. The vendor facilitates the user with the application development, maintenance, updating and testing. The user buys the platform according to his use for the given time period^{[17][18]}. Our implementation at this level facilitates the user with variable platform. It allows the user to work on different platforms at the same time with the same cost. It increases the speed and provides a more efficient application. When we talk about the Private Cloud , the vendor uses the application for his own organization and the situation is just that there are only few authenticated users others have restricted. The owner as he is using the application he provides a platform where he needs attention from his employees and allows a limited access and the platform is being provided according to the restriction. The implementation is shown in Figure below.

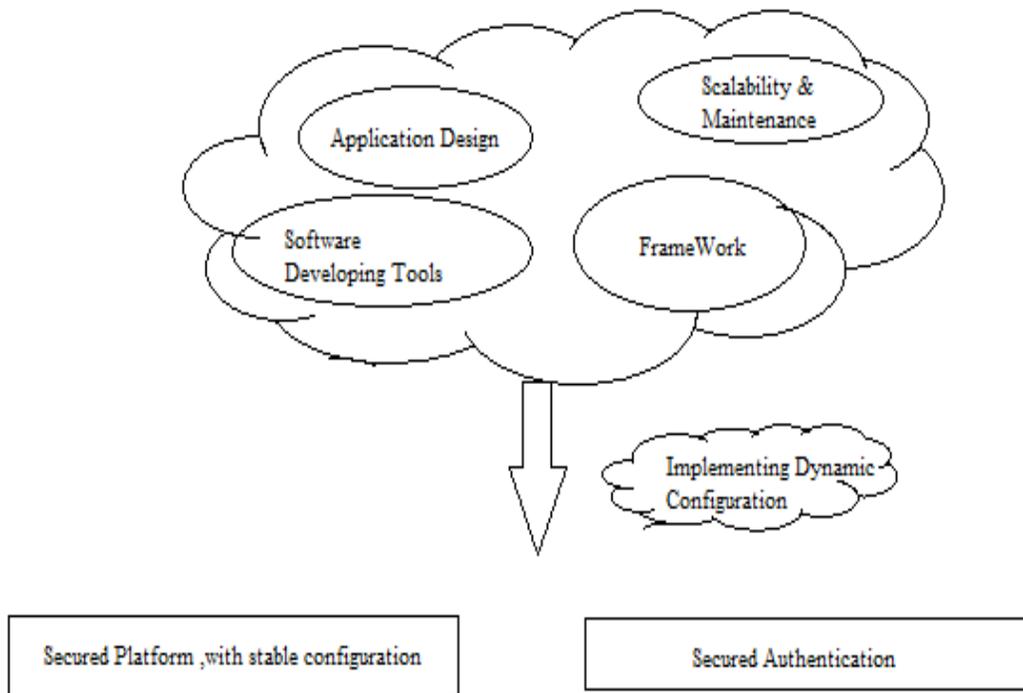


Fig. 4.2 Dynamic Configuration implemented on PAAS

Tier III Implementation on SaaS^[19] : Software As a Service. Any organization that is working on Private Cloud provides its employees an access to its application and time to time they have update in the application .High Security is required over here as the Application data and authentication can reach to hackers .Timely updated and dynamic configuration will help the application being secured. Dynamic Configuration will allow the application to work with in the organization but will keep the changing the configuration terms and location.^[21] We do not have a fixed IP Address for the application .Any Banking system or any organization which handles with high secured data need high security and dynamic configuration will allow the security raise without letting anyone know about the changes .

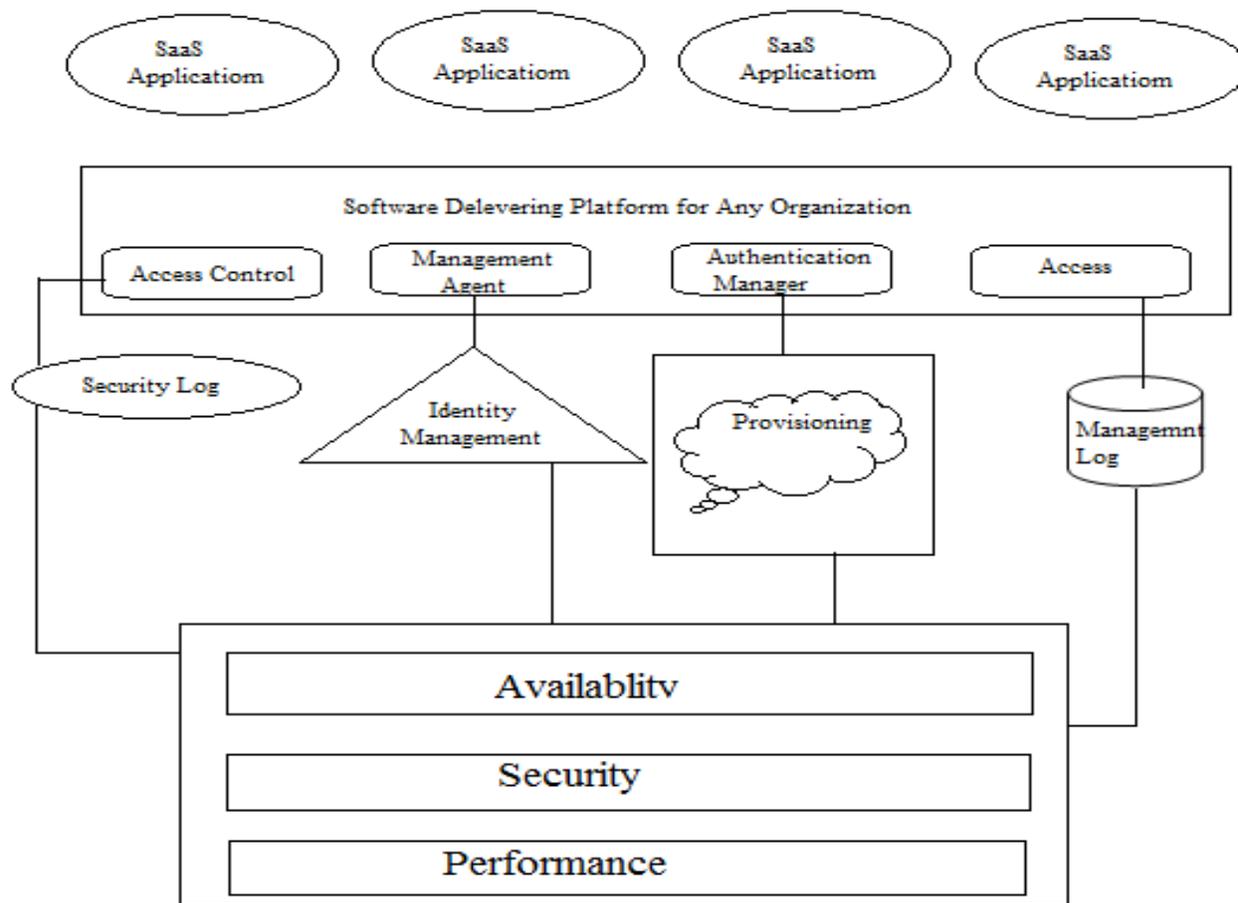


Fig. 4.3 Dynamic Configuration Implemented on SaaS

Dynamic Configuration has led to high security and prevented any illegal authentication. Taking the example of small organization that is running its application just for its employees for example Payroll Management System .This application is being installed in more than ten systems in the organization out of that just few authentication have full access , rest are for viewing and inserting the data .For more and beter security the application can be moved to dynamic configuration .Dynamic configuration^{[24][25]} will dynamically change the address of the server without user being informed about it .The authentication that have full access in the application can have access to it .

Moving further we just need three important features in the configuration i.e Availability of resources, Security of the resources and Performance of the server. Dynamic server provides high availability as it is holding more than one server and dynamically change the connection to any server .Even if any server is on update the system can be application can be connected to any other server without failure of connectivity .This features ensures takes use of all the resources and make it available to the user. When we look about the security since the concept of dynamic configuration leads to different server with different IP address .Hence the security increases as even if the hackers hack any one of the server or database till that time the system will change its setting with some other server .Since we have more than one server and connectivity the performance will increase to its peak .The implementation of Dynamic server is shown in the figure V^{[24][25][26]}

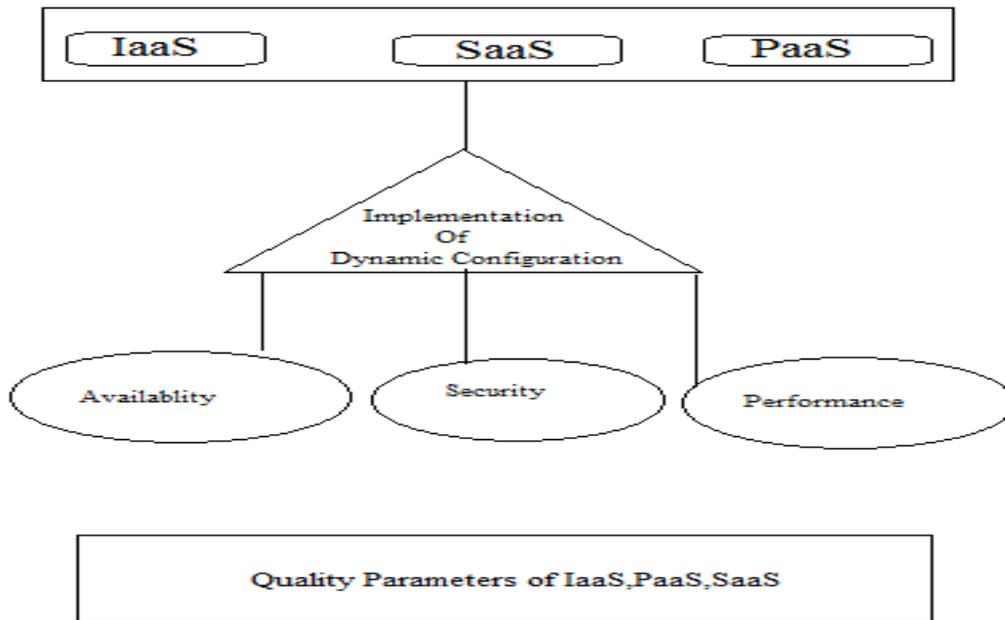


Fig. 5. Assembling and Configuration

5. RESULTS

The final results shows how we get the quality parameters. I have taken C as a Cloud , I as Infrastructure as a Service , P as a Platform as a Service , S as a Software as a Service ,ds as Dynamic Configuration R as Resources , A for Availability , S for Security , P for Performance , Q for Quality parameters . A cloud has three Services IaaS (Infrastructure as a Service , PaaS (Platform as a Service),SaaS (Software as a Service) .I have implemented Dynamic Configuration and created a dynamic Server .Dynamic Server implemented on all the three services I , P , S .Implementing the Dynamic configuration we get high availability of resources , high security on the resources , and performance of the Cloud .As a result we get the quality parameters as a output.The entire work Structure and equation generated is shown below :

$$\begin{aligned}
 & \text{Implementing Dynamic Configuration} \\
 C(I+P+S) & \xrightarrow{\hspace{2cm}} ds(I+P+S) \\
 = dsI + dsP + dsS & = R(A + Sc + P) = Q(I+P+S) \\
 = QI + QP + QS \\
 = Q(I+P+S) \\
 C & = \text{Cloud} \\
 I & = \text{Infrastructure as a Service} \\
 S & = \text{Software as a Service} \\
 P & = \text{Platform as a Service} \\
 ds & = \text{Dynamic Configuration} \\
 R & = \text{Resources} \\
 Q & = \text{Quality Parameters}
 \end{aligned}$$

6. CONCLUSION

The implementation of Dynamic Configuration has resulted in highly sensitive and progressive response by the clouds. The cloud is meant to fulfil the requirement of an entrepreneur as well as the customers. Our aim is to develop an intelligent Cloud which can work and can chose the services at its own without wasting time and extra cost. Often we have seen the user is not satisfied with the service and tries to switch from one server to the other and in every server he faces one or the other problems. There is no overall solution to the problem and user has to face the problem. This results in the loss of an Entrepreneur. We would work in sorting out this types of problems where are user need not to switch from one server to the other and can be given a proper choice .The other step which will be involved in this will be that there will be interconnections between the clouds so that the user of one server can access the application of other servers and would just pay for the thing that he used. We have limitless application running currently .The current demand is to develop a reliable cloud which proves the user with availability , security and stand alone resources. Implementation of Dynamic Configuration might smell lighter but it has a hard effect on the technology and has proved itself in making the technology stronger. This opens new arms for research and provides a better outcome to the users.

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