

Automating Service Negotiation Process for Service Architecture on the cloud by using Semantic Methodology

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Abstract—the appearance of Cloud Computing is changing the way in which software services are delivered and consumed. There is increased need for Cloud environment to control the quality and standards of software offered on their environment by having different kinds of policy. Virtualized service models are now appearing and redefining the way of Information Technology is delivered. Dealing with all these services perform on the cloud is the open challenge. This unified method for architecture of services that delivered on the cloud. These services architecture is divided into five parts of Specification, Finding, Negotiation, Composition, and Utilization. These five parts are very important in the architecture of services and also describe the high level framework for services. The Goal of this to automating composite IT related services using Negotiation process.

Keywords-Cloud Computing; Semantic Web; Web Based Services; Service Architecture.

I. INTRODUCTION

According to Information Technology (IT)[1] as a service is firstly changing the business mode within organization. In businesses purchased the Information Technology components such as Hardware, software, network bandwidth. All these components can be purchase from providers who anywhere in the world. Services are obtained by demand. Frequently many providers can participate to create single web service for the organization. The numbers of services are using service-oriented architecture and creating distributed applications over the web. Web services are the part of the e-commerce, communications, marketing etc...These Services can be involve in the government sector, military sector, or it may be business applications

According to the different sectors the required services and its functionality is different. In these situations multiple providers [1][8] can participate to create single service for the organization. In some cases business application wants only single service provider and create only single service for the organization. In other cases single provider can utilize the services of the other service providers. Today we move away from the single service provider and greater the use of the composite services, technology, process, humans. According to the scenario when delivering the IT services they have one or more service providers can handle the multiple services over the

distributed network in the cloud. This type of web services [1] are hosted on the cloud and delivered to the organization or end user via internet or cellular phones. One Results of this development is end user can select the service provider from the list of service providers. This List can be acquired from the Broker, then composite services are combined together according to the requirements. Broker can give the description of the service functionality. When there is large organization there is lack of integrating the service creation and development. In this paper, to automate the negotiation part in the service architecture. Here we specify the semantically rich descriptions of requirement, constraints, and capability of each phase in the service architecture. Semantically rich descriptions also provide the cloud attribute and service level agreement for the end users and automate the process by using service provider. First Implementing the cloud storage prototype and evaluate the methodology and here this prototype is allow the end user to obtain the disk storage by define the service attributes, and security policies by user interface. Basic Specification is for to show ability to exchange the data or communicate with service providers at semantic levels.

Second service design requirement is merged well with the web and distribute the information system. For this access the basic web standards and protocols without any conflicts with both. Web standards and protocols are emagered with the HTML pages and number of search engines such as Google, Yahoo etc...HTML Requirement used the branches of semantic statements within previous contest on webpages.

Third, there are number enterprise level and freely available tools that take care of the semantic web languages. There are number of database vendors available consider ORACLE etc...

II. LITERATURE SURVEY

Cloud Computing [8] is an evolving model. This model is suitable for whenever required the network access .It can enable globally. This cloud computing can shared the configured services by using resource such as servers, network, and server's capacity. Cloud computing can reduces the efforts of management and interaction between the service providers. This cloud have three services models such as software-as-service(SaaS),Platform-as-service(PaaS),Infrastructure-as-service(IaaS).Reaserch on the cloud or their web services has been less exploring a

single aspect of the life cycle such as service composition. There are no any automating methodologies for the whole service life cycle. Now a day's large organizations required the cloud services. That Cloud Services provide through public cloud provider. The organizations used these services through providers but there is problem of procedure that merging these different type of services.

In this whole description service requirement is important part. Because using these service requirement budgets will be calculate. According to that budget negotiation can be automate step by step until user can get their desire budget. Set of services which are available that serves can be provided by the service provider according to the attribute of the component.CNP (Contract Net Protocol) used for when number of agents are actively participate in the system. It manages the agents work.

J.Tordsson et.al.[13] presented the goal for enabling and simplify the creating a variety of models for cloud computing that involves multiple cloud provision architecture. Complex configured of clouds that can support limited number of the resources from the many providers.

Papazoglou and Heuvel [15] have proposed procedure for the service designing and development in service-oriented architecture. They also examined the method of development from both service providers and service requesters. Service design and development finding the correct services and arrange in the hierarchical manner .So then can identify the business procedure. Their approach is covered limited area only i.e. Service creation and deployment of the web services and it is not suitable for the virtualized environment, when services are composed according to the service demand. Bianchini [10] do not provide the flexibility and one service can provide by single service provider for the limited area .Zeng et.al[9] proposed the address for the quality based selection in the service composite phase using global planning technique while selecting the component human factors are not consider and that affects the quality metrics. Black et.al[11] proposed the structured model for IT service management .But according to the service provider's point of view this structural model can handle limited services.

J.V.Bon et.al[14] included service specification, service design ,service deployment, service improvement. This IT (Information Technology) service framework does not include in the service cloud or virtual environment. J. Hender [6] presented the descriptions of the semantic web services as well as analysis the mode, That all integrated in the service architecture M.Singh[16] presented an integrated method for automated service discovery. They constructed two major parts first semantic based categorization and service selections. It also consternated on the service compositions. B.Benatallah et.al [12] presented the configured and adaptive purpose of the web services. CCAP system supports the composition environment. It also aware about the context and dynamic exception handling. It is fully distributed execution of configured services. This presented the contract Net Protocol for negotiation phase but it had implementation about virtualized services so this protocol is not suitable for services which are run on the cloud.

III. EXISTING SYSTEM

The cloud computing is nothing but providing the services on the cloud. In the system there is methodology for developing and creating the services using architecture. So there is no flexibility in developing and crating the services. Next factor comes is service quality; when creating or developing a services the quality factors are also important. But these operations are considered for only single service. For software development there are number of architecture having different stages & according to those stages overall framework is executed. In this system the stages of service architecture is not automatically executed on the cloud. Each stage is having the human agent and according to the human agents requirements the stages were executed. Existing system presented service architecture that is not fully automated using semantic methodology. This architecture did not describe the services. They simply specify the functional and technical specification for the services.

In this Existing system service architecture is divided into five stages. They are Requirement, Discovery, Negotiation, Consumption; Composition .Each stages required the human agent policies of the end users. So according to those policies each stage is executed. Figure 1 shows the existing architecture for the service This architecture was presented by K.P.Joshi et.al.[1] presented the five phases architecture .This architecture could follow the user agent polices at each phase so that at every stage user agent policies are verified as well as user requirement was also verified and then according to the user agent respond the each stage was executed.

In this architecture there is human interaction is more than end user as well as it took more time to respond at final stage .So that for improvement the service architecture must keep automating. Especially Negotiation Phase must be automated because this stage require compulsory user agent for deciding the cost of the service. So, our aim is to automate the negotiation phase on the cloud. In section IV we presented the how we automate the negotiation phase

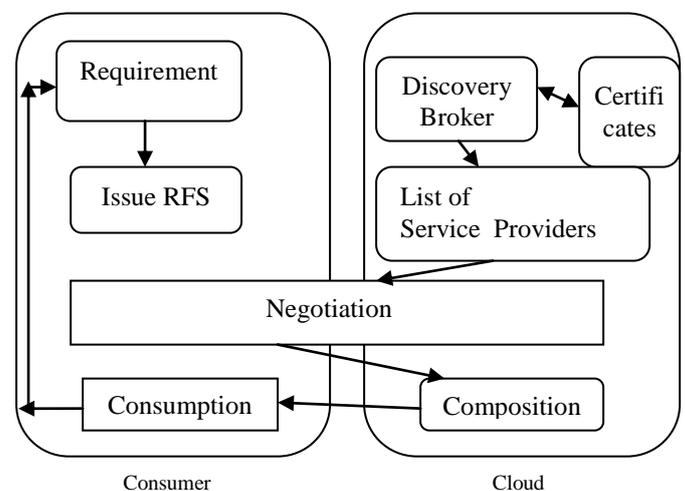


Figure 1. Service Architecture on the cloud w.r.t. five stages

IV. PROPOSED SERVICE ARCHITECTURE DESCRIPTION

In the proposed system IT services are run on the cloud automatically using service architecture. Service architecture can maintain the details of services such as service data, service quality, service cost, logs, service response time, memory required to process the service etc.

For this maintainance divide service architecture into five parts. They are Specification, Discovery, Negotiation, Configuration, and Utilization. This five Parts are

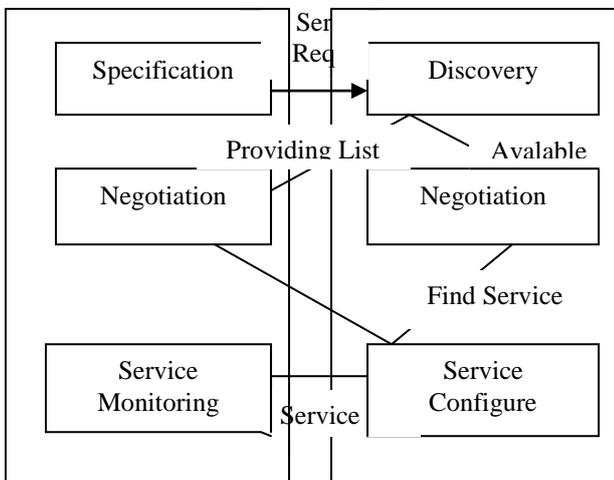


Figure 2: Proposed Automated Service Architecture on the cloud

In the above service Architecture our focus on to automating the Negotiation part. For automating the negotiation part we do not require any agent polices to automate this part. It can negotiate according to the functional and technical specifications such as Response time of the service, Memory required to store the services, Speed. Our Architecture can integrate the functional and technical specifications with security policies. These all information can considered in the first part i.e. Specification We have also describe how each part can participate when dealing with procedure and data flow of this architecture.

a) Service Specification Phase

The first part in service architecture is Service Specification. This specification can be given by the Users. Users may given the functional or technical or non-functional specification according to which service user wants. Specification may contain IT components, operating system etc constraints.

- List of Functional Specifications:
 - a. Work for Service
 - b. Cost
 - c. Area of Service
 - d. Response Time of Service
- List of Technical Specifications:
 - a. Single Operating System
 - b. Memory or RAM
 - c. Speed to execute the services
 - d. Three Layers of Cloud
- Security Policies:

- a. Permissions to access the services
 - b. Data Encryptions
 - c. Validations
- Data Quality Policies :
 - a. If the end users want to reducing the cost it also accept the Low-Quality Data

b) Service Discovery Phase

In this second part according to the specification given by users, the service providers are allocates. For allocating the service providers there are some rules. Cloud can identify validation of service providers as well as service certification. If both are validate then only then allocates the service provider to the users request. The List of all available Service Providers are sent to the Negotiation Part.

If the end users meet his/her requirement according to cost then end users immediatly consume the service with the payments. In other side end users can start negotiate the with service providers for acquiring the service with appropriate budget, which in the next phase.

c) Service Negotiation Phase

Service Negotiation Phase involves the detail discussions and dealing with the service providers and the end users. In this phase service is deliver according to the cost provided by end users as well as it accept the service when end user requirements are fulfill. For Negotiation phase it accept the technical and functional requirement then according to that it give the list of all the service providers which suitable for that services as well as it represent the cost of that services. In this phase we used HTTP or TCP/IP Protocol for run the virtualized service on the cloud. There are few steps involved for the how to negotiate with service provider as well as end users.

Steps for the Service Negotiation:

1. End user send the service request for service provider according to their specifications
2. If the service is available then sends for the negotiation.
 - a. If the end user's requirement is partially match then end users can change its technical or functional requirement.
 - b. If the end user's requirement is fully match with the service provider then it negotiation is not considered in this case.
 - c. If End user can reject the service the negotiation phase is terminated automatically.
3. Otherwise it terminate the negotiation

The Algorithm For Approaching to automate the negotiation:

- 1) Get the request from the Specification phase
- 2) Get minimum required value for the resources.
- 3) Read the Maximum Permissible value (m_p vale) i.e. read the Response time, Cost, Speed, Memory
- 4) If m_p value is less then minimum required value then accept the service for that service provider as well as it gives confirmation of request.
- 5) Otherwise it again repeats the step 2

d) Service Configure Phase

In this stage combine the reports of all users' service that run on the service provider and send the single service report to each and every end user.

It can configured the composite services. In this high level descriptions are required to configure the service.

e) Service Monitoring Phase

This is the last part of the service architecture .In this part user can receive the service using Negotiation part. In this case suppose user is not fulfilled his/her specification then automatically service may be stop or terminated by user .In this phase end user can monitored the process as well as data flow according to the his/her requirement.

• Semantic Web

The Semantic Web is evaluating of the Web by users to discover, allocate, and merge information more easily on the cloud. Semantic web used for improving the cycle of service architecture. It also converts the data into machine Formats. It also stores the data about data. This semantic methodology is used for to conference between all the users and use data as well as services of other users. It also gives the automatic retrieval of the data.

We used XML schemas as well as MYSQL schemas for the semantic automations. It enables the query knowledge according to the MYSQL language. Results are stored in machine process able formats as well as table formats they can have the capacity to store the service information .It also be interface with the machine friendly with its knowledge. These schemas give the declarative description of the services but to provide the statically information of that services.

V. EXPERIMENTAL RESULTS

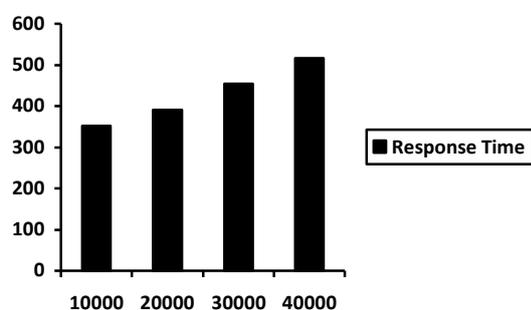


Figure 3: Graph for cost vs. Response Time

The above graph shows the results for the cost vs. Response Time. In this graph when cost is increase then response time is also increase for the particular service request.

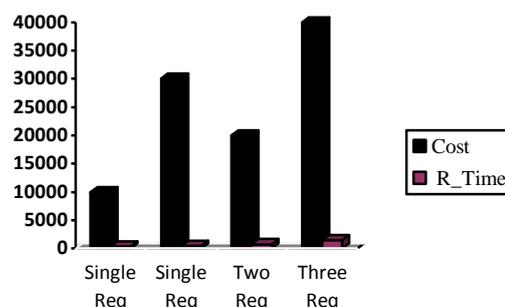


Figure 4: Graph for the Number of Request vs. R_Time and Cost

In this graph when single request is execute with respect to different cost the response time i.e. R_Time is change. When different service requests with different cost then the response time is increase according to the cost.

VI. CONCLUSION

In this paper, we have defined layered architecture for procedure needed to automating the service on the cloud. Our procedure can complete to automate the negotiation process as well as give the service descriptions. At every stage of the service architecture determines the end users satisfactions. Due to the automating process user agents policies are not required at every stage of architecture.

Here, we developing the tool that satisfying the automating negotiation process for cloud based services. Therefore this architecture gives more advantages such as time required for service discovery and configured is less. Second advantage is multiple users can analyze the service.

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