

To Automate the Life Cycle of Cloud Services through Semantic Technologies

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Abstract— *To developed and enforced a cloud storage service paradigm to demonstrate and appraise IT service methodology. The model permits cloud customers to get and acquire disk storage on the cloud by specifying the service attributes, security policies, and compliance policies via an easy programme. In info technology (IT) as a service delivered to the top user could be a paradigm shift that's quick dynamic the means businesses appearance at the role of IT inside the organization. The service is non-inheritable on associate degree as-needed basis and might be termed as service on demand. Typically, the service is hosted on a cloud or a computing grid and is delivered to the organization via the web or mobile devices.*

Keywords—*Semantic Web technology, cloud life cycle, ontology design, web-based services and Intelligent web services*

I INTRODUCTION

Information technology (IT) merchandise and services that were an earlier either in-house or outsourced are currently being replaced by a replacement delivery model wherever businesses purchase it parts like software system, hardware or network information measure or human agents as services from suppliers united nations agency will be primarily based anyplace within the world. Such services can progressively be non-heritable “on demand”, and composed on the fly by combining pre-existing parts. In such state of affairs, multiple suppliers can collaborate to create one service and every element service are going to be virtualized and would possibly participate in several composite service orchestrations. The service, in effect, will be virtualized on the cloud. In any organization service acquisition are going to be driven by enterprise specific processes and policies that may constraint this acquisition. The educational community has recently become inquisitive about automating steps required to accumulate services from the cloud. However, researchers have focused on problems like service discovery or service composition. For our analysis, we've worked on automating the complete life cycle of services on the cloud from discovery, negotiation to composition and performance observance.

Our mechanism: we believe that a semantically made, policy-based framework can facilitate the automation of the life cycle of virtualized services. We've developed associate integrated methodology that encompasses the complete knowledge and method flow of services on the cloud from origin, creation/composition to consumption/ observance and termination. We've known processes and policies to change this life cycle. We've used semantically made descriptions of the necessities, constraints, and capabilities that area unit required by every part of the lifecycle. This system is complementary to, and leverages, previous work on ontologies, like owl-s, for service descriptions therein it's targeted on automating processes required to obtain services on the cloud. We've focused on facultative multiple iterations of service negotiation with constraints being relaxed throughout every iteration until a service match is obtained. Victimization linguistics internet technologies like *Raptorial Bird* and *Battle of Jena*, we've conjointly created high level ontologies for the assorted phases. These is reasoned over to change the phases radio-controlled by high level policy constraints provided by shoppers, service customers, or service suppliers. Linguistics internet technologies conjointly address the ability and movability issue of cloud computing.

Appraisal: there is presently no success criteria supported comparisons with previous work. We tend to area unit developing a system as a symbol of construct and can validate it against example enterprise policies obtained from numerous organizations. Towards that we tend to area unit collaborating with bureau, a national organization. Together with bureau, we tend to area unit coming up with an example of our projected methodology which is able to work as a “pilot” to demonstrate automatic acquisition of services on the cloud. This pilot is being developed by exploitation linguistics net technologies like hooter, RDF and SPARQL. We tend to also are collaborating with a world establishment and also the UMBC IT department to know the complete method and policies that area unit applied towards procuring it services. We will calibrate our system to demonstrate however distinct processes of service acquisition can be captured and the way enterprise policies will be expressed exploitation our metaphysics and other policy languages to point out that the service acquisition method will be machine-driven.

One of our analysis goals is to develop acceptable ways in which to judge our system. One live is existential will we tend to produce a system which will change the service acquisition method via our lifecycle's realization. As that our approach depends on semantically made policies, another live is however well our ontologies and policy mechanisms handle a given real-world policy. given the massive and numerous organization from that we tend to area unit seeking policies, we tend to hope to induce an honest sampling to see that enterprise policies will be machine-driven for service acquisition

and that cannot be. Thus our analysis may also change United States of America to see however helpful such an automatic service procuring system are within the world. These area unit our preliminary concepts on evaluating our analysis that we tend to attempt to refine more.

II RELATED WORK

Most approaches to automating the acquisition or use of on-line services are limited to exploring one side of the life cycle like service discovery, service composition or service quality. There's no integrated methodology for the complete service life cycle covering service designing, development and readying within the cloud. Additionally, most of the work is restricted to the code part of the service and doesn't cowl the service processes or human agents that square measure a crucial part of IT Services. Planned a technique for developing and deploying internet services victimization service orienting architectures. Their approach, however, is limited to the creation and readying of internet services and doesn't account for virtualized setting wherever services square measure composed on demand. Suppliers might have to mix their services with different resources or providers' services to fulfill shopper wants. Different methodologies, like that, don't give this flexibility and square measure restricted to cases wherever a single service supplier provides one service. The quality based mostly choice of composite services via a world designing approach however don't cowl the human factors in quality metrics used for choosing the parts.

The proposed a metaphysics to capture quality of an online service so quality attributes is used whereas choosing a service. Whereas their metaphysics will function a key building block in our system, it's restricted by the very fact that it considers single internet services, instead of service compositions. The planned AN integrated model for IT service management, but it is limited to managing the service from solely the service provider's perspective. They need represented a framework for internet service negotiation victimization the iterated Contract internet Protocol. But their implementation is restricted to preexistent internet services and doesn't touch virtualized services that square measure composed on demand. Our negotiation protocol, as elaborated in, accounts for the very fact that the service are composed solely once the contract SLA listing the constraints is finalized. Good Relations is a metaphysics developed for E-commerce to explain product. Whereas this metaphysics is beneficial for describing service parts that exist already on the cloud, it's tough to explain composite virtualized services being provided by multiple vendors' victimization this metaphysics.

Researchers like have planned algorithms for service discovery victimization SPARQL language. We tend to square measure victimization SPARQL and different associated linguistics internet technologies to permit advanced negotiation method between service suppliers and repair shoppers. The Information Technology Infrastructure Library (ITIL) may be a set of ideas and policies for managing IT infrastructure, development and operations that has wide acceptance within the trade. The most recent version of ITIL lists policies for managing IT services that cowl aspects of service strategy, service style, service transition, service operation and continual service improvement. However, it's restricted to deciphering "IT services" as product and applications that square measure offered by in-house IT department or IT consulting corporations to a corporation. This framework in its gift kind doesn't touch the service cloud or a virtualized setting that consists of 1 or a lot of composite services generated on demand.

Life cycle governance thinks about with making certain a structured and disciplined approach to introducing third party extensions, deploying them to the platform's execution atmosphere, modifying them, or removing them. Central to life cycle governance is that the notion of a life cycle model process the phases that each completely different managed package entity is duty-bound to proceed through, similarly because the preconditions related to the transition from one life cycle part to following. As an example, one amongst the life cycle governance policies outlined for the forged platform states that a precondition for allowing AN app to proceed from the review part to the beta testing part, is for the app to be associated with a top quality review report that contains a positive analysis.

III SYSTEM MODEL

CLOUD OPERATOR: The community cloud operates a cloud-based multimedia system stream mining system that extracts period valuable data out of unclassified video streams uploaded via wireless links. The stream mining system will be viewed as a collection of classifiers filters. We have a tendency to take into account during this paper binary classifiers for the convenience of research, whereas alternative classifiers may also be thought-about. A multimedia system stream filtered through a binary classifier could have 2 potential labels: "Positive" and "Negative".

PLAN CREATION: In this project the plan for cloud access is generated by two ways. Such as,

1. **Reservation**
2. **On-Demand**

In reservation process, the cloud user previously reserves the cloud space in a particular timing period. In On-Demand process, the cloud user uses a cloud space in particular time without any reservation.

QUERY EXECUTION: The cloud cache may be a full-fledged software alongside a cache of knowledge that reside for good in back-end databases. The goal of the cloud cache is to supply low cost economical multi-user querying on the back-end knowledge, whereas keeping the cloud supplier profitable. Service of queries is performed by capital punishment them either within the cloud cache or within the back-end info. Question performance is measured in terms of execution time. The quicker the execution, the lot of knowledge structures it employs, and thus, the costlier the service.

AMOUNT CALCULATION: We assume that every structure is made from scratch within the cloud cache, because the cloud might not have administration rights on existing back-end structures. Still, low-cost computing and correspondence on cloud infrastructure could profit the performance of structure creation. For a column, the building price is that the price of transferring it from the back end and mixing it with the presently cached columns. This price could contain the value of web grating the column within the existing cache table. For indexes, the building price involves taking the info across the web then building the index within the cache.

AMOUNT DETECTION: Profit maximization is pursued in a very finite semi-permanent horizon. The horizon includes successive non-overlapping intervals that give programming structure convenience. At the start of every interval, the cloud redefines convenience by taking offline a number of the presently obtainable structures and taking on-line a number of the unavailable ones. Rating optimization take in iterations on a slip time-window that permits on-line corrections on the expected demand, via re-injection of the important demand values at every slip instant. Also, the unvaried optimization permits for redefinition of the parameters within the price demand model, if the demand deviates well from the expected. Our process of cloud charges area unit mechanically reduced from our account.

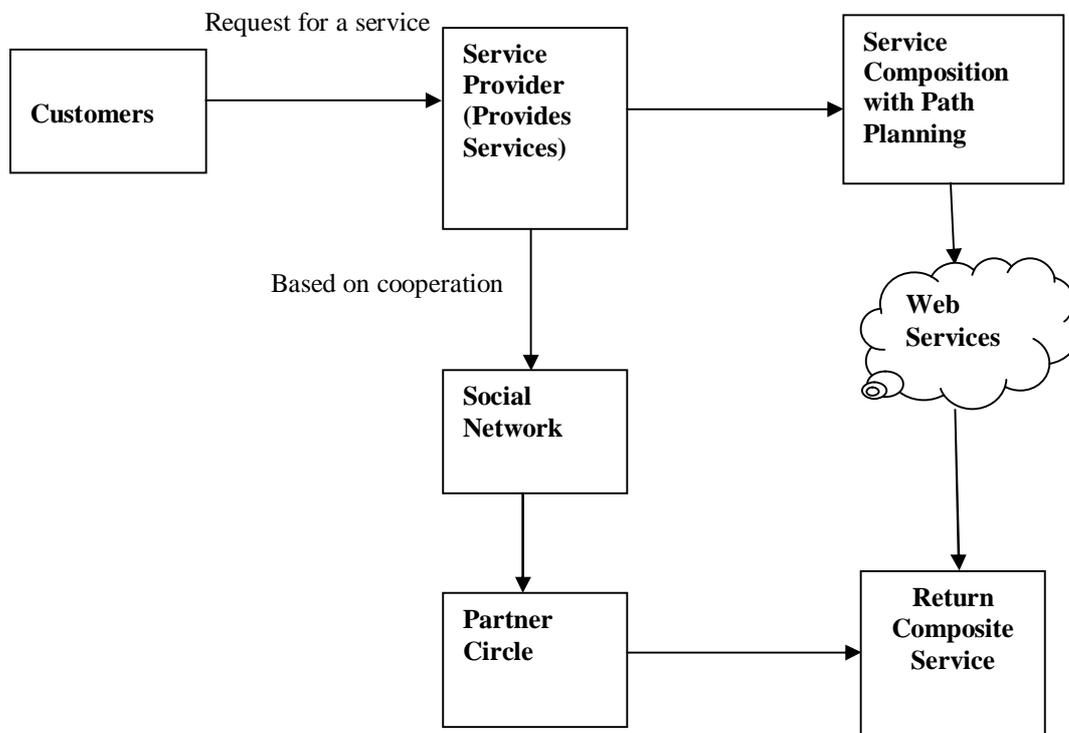


Fig.II.1 System Architecture

PLAN RESERVATION: In reservation arrange, the cloud uses reserve the cloud ahead for his or her necessities. During this means, we tend to pay the payment of the reservation in on the spot. That is, once we can reserve the cloud house mean, at the time we tend to pay the payment conjointly.

IV SERVICE LIFECYCLE ONTOLOGY

We have developed a replacement methodology that integrates all the processes and information flows that area unit required to mechanically acquire, consume and manage services on the cloud. We have a tendency to divide this IT service lifecycle on a cloud into 5 phases. In sequent order of execution, they're necessities, discovery, negotiation, composition, and consumption. We've delineate these phases well alongside the associated metrics in could be a picturing particularization the processes and information flow of the 5 phases. We've developed the metaphysics for the whole life cycle in bird of prey two metric capacity unit profile.

1. SERVICE REQUIREMENTS PHASE

In this section, the patron details the technical and practical specifications that a service must fulfill and conjointly non-functional attributes like characteristics of the providing agent, constraints and preferences on knowledge quality and needed security policies for the service. Service compliance details like needed certifications, standards to be adhered to etc. are known. Counting on the service value and handiness, a shopper is also amenable to compromise on the service quality. The technical specifications lay down the hardware, software, application standards and language support policies to that a service ought to adhere. Once the shoppers have known and classified their service wants, they issue an invitation for Service (RFS). This request might be created by directly contacting a couple of service suppliers for his or her quotes. As an alternative, shoppers will use a service discovery engine or service broker on the cloud to acquire the service.

2. SERVICE DISCOVERY PHASE

Service suppliers are discovered by examination the specifications listed within the RFS. The discovery is affected by practical and technical attributes outlined, and conjointly by the fund, security, compliance, and knowledge quality and agent policies of the patron. Whereas looking the cloud, service search engines or service brokers may be used. This engine runs a question against the services registered with a central written account or body and matches the domain, data type, compliance wants, practical and technical specifications and returns the result with the service suppliers matching the utmost range of needs listed at the highest. One essential a part of this section is service certification, within which the shoppers can contact a central written account, like UDDI, to induce references for suppliers that they slender all the way down to.

This part uses the RFS category from the necessities part to look for service providers and generate a listing of suppliers with that to start negotiations. The class Service certification validates the provider's credentials. If the customers realize the precise service inside their budgets, they'll begin overwhelming the service forthwith upon payment. However, typically the customers can get a listing of suppliers United Nations agency ought to compose a service to fulfill the consumer's specifications. The buyer can then have to be compelled to begin negotiations with the service suppliers that is that the next part of the life cycle. Every search result can come back the first supplier United Nations agency are going to be negotiating with the buyer.

3. SERVICE NEGOTIATION PHASE

The service negotiation section covers the discussion and agreement that the service supplier and shopper have concerning the service delivered and its acceptance criteria. The service delivered is decided by the specifications set down within the RFS. Service acceptance is sometimes radio-controlled by the Service Level Agreements (SLA) that the service supplier and shopper agree upon. SLAs outline the service knowledge, delivery mode, agent details, quality metrics and price of the service. Whereas negotiating the service levels with potential service suppliers, shoppers will expressly specify service quality constraints (data quality, cost, security, reaction time, etc.)

4. SERVICE COMPOSITION PHASE

In this part one or additional services provided by one or additional suppliers area unit combined and delivered as one service. Service orchestration determines the sequence of the service elements. The most category of this part is that the Service category that mixes the assorted elements into one service. We have a tendency to embody the OWL-S Composite method category metaphysics. The Service category takes inputs from the Specification, Service Contracts and Service Level Agreement categories outlined within the earlier phases to assist verify the orchestration of the assorted elements.

5. SERVICE CONSUMPTION PHASE

The service is delivered to the patron supported the delivery mode prescribed within the negotiation part. Once the service is delivered to the patron, payment is formed for a similar. The patron then begins overwhelming the service. In an exceedingly cloud surroundings, the service typically resides on remote machines managed by the service suppliers. Therefore the load for administrating, managing and observance the service lies with the supplier. During this part, shopper would require tools that modify service quality observance and repair termination if required. This may involve alerts to humans or automatic termination supported policies outlined exploitation the standard connected ontologies.

III CONCLUSION AND FUTURE WORK

In this paper we've got outlined the integrated life cycle for IT services on the cloud. To the best of our data, this can be the primary such effort, and it's crucial because it provides a "big" image of what steps square measure concerned in deploying IT services. This system can be documented by organizations to see what key deliverable they'll expect at any stage of the method. We tend to square measure presently processing the metaphysics delineated into capture the steps and metrics we've got known within the life cycle victimization linguistics net languages.

We tend to also are developing a paradigm unitedly with bureau to demonstrate the service life-cycle for a storage service on the cloud. We tend to square measure making the paradigm by victimization linguistics net technologies like SPARQL, raptorial bird and RDF.

Our design, however, permits the usage of the other secure information transfer technique, system with increasing patient information volume and system with absolutely wearable wireless sensing element ways with automatic medicine system with threshold based mostly safety alarm ways that we have a tendency to conceive to explore in our future work.

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