Introduction of SOA in Cloud computing for facilitating new services

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Abstract :SOA is an Architectural principle that positions IT services as the primary means through which Business services are offered by the organization to its ecosystem therefore SOA offers the prospect of better alignment of academic and administrative goals to It solution in Education organization also it is a method for publishing services hosted by computer systems for the use of other computer systems.

On other hand, cloud computing depict wide ranging advancement towards the operation of wide area networks such as the internet to facilitate interface between IT service supplier and clients. Cloud computing has a numeral profits and threats that should be looked at by any higher ranking guidance group taking into account the relocation of its enterprise computing IT portfolio.

SOA and Cloud computing are complementary activity and both will play important role in IT services. The aim of this paper is to Merge SOA in cloud computing to provide an organization with aspect to select common standard for network Accessible capabilities while the concept share many common characteristics they are not synonymous and can be perused either independently or as concurrent activities

1. Introduction:

Software engineering is a systematic approach of development, operation and maintenance of software. In software engineering Service-Oriented Architecture, different method which is used for software development with the help of services and these services may communicate with other services also. Service-Oriented Architectures (SOA) is becoming increasingly widespread in a variety of computing domains such as enterprise and e-commerce systems, which continue to grow in size and complexity. These systems are expected to adapt not only to the fluctuating execution environments but also to changes in their operational requirements. SOA is a collection of different services and these services can communicate to each other using message passing (message passing include simple data passing or coordination of different activates). Software architecture describes the system's components and their interaction at the high level. These components are not distributed objects and work as a module which is deployed onto a server as a single unit along with other components and the interaction between the components is called "connecters".

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Using Service-oriented Architecture, Software quality can be improved as well as cost will reduce with more reusable component in software engineering. Reusable components are designed to perform specific functions. These are independent and pre-built pieces of programming code. Therefore, it is important and productive to conduct research on how to develop software with service –oriented computing technology. There is not enough research and practices to implement "register, find, bind and execute" paradigm and make practical and cost-effective. So we need to analyze this process deeply to provide practical architectures and methodologies for reusable services.

The impact of reusability in SOA is innovative. The component development for providing various services is difficult task for a Service Oriented System. It is not efficient to develop a new component for a new service every time as it would not be economical and also it is difficult to integrate it with the Legacy System.

Today as per change in environment software also change according to that new requirements are added as old one are deleted from software but any software model do not include this feature so service oriented architecture uses services for contraction of low cost, secure and reliable applications with the help of WSDL web service description language services are designed for how they look or work and in one service many services can be combined together. new service every time as it would not be economical and also it is difficult to integrate it with the Legacy System. There has also been an emergence of a dynamic understanding and need to control what how and when the cloud provides services to the consumers of those services.

2. New Service Introduction to SOA

This paper proposes a combined model for service discovery and negotiation of new service. In the paper the discovery method and new service negotiation method is discussed with different process. Service requesters can be either arbitrary application developers or other service providers. A service provider needs to register its services with a service registry and provide services directly to interested parties. Each service may have multiple service interfaces to meet the needs of different requesters, and requesters can dynamically discover the interfaces they require. Making discovery-based service abstraction is challenging.

Step 1: In this model first of all service and negotiation thread is discovered, and specifications are searched.

Step 2: If specifications are exactly matched then available service is searched and provides the service. If specification is not matched then request gets rejected and will search for new service. Now it will check the interface with matching parts and send request for the same.

Step 3: If request is served then prepare the contract document otherwise search for new one.

Step 4: the new search checks whether the new service is posted and prepare the contract otherwise negotiation is done for the provided service. If service is not negotiable then customer can exit from the process.

Step 5: In this model modification can be done in the new service before or after negotiation, then bind and execute.

Step 6: After contract documents are sent to the requestor the service is bind and executed, and specifications are sent to the registry.

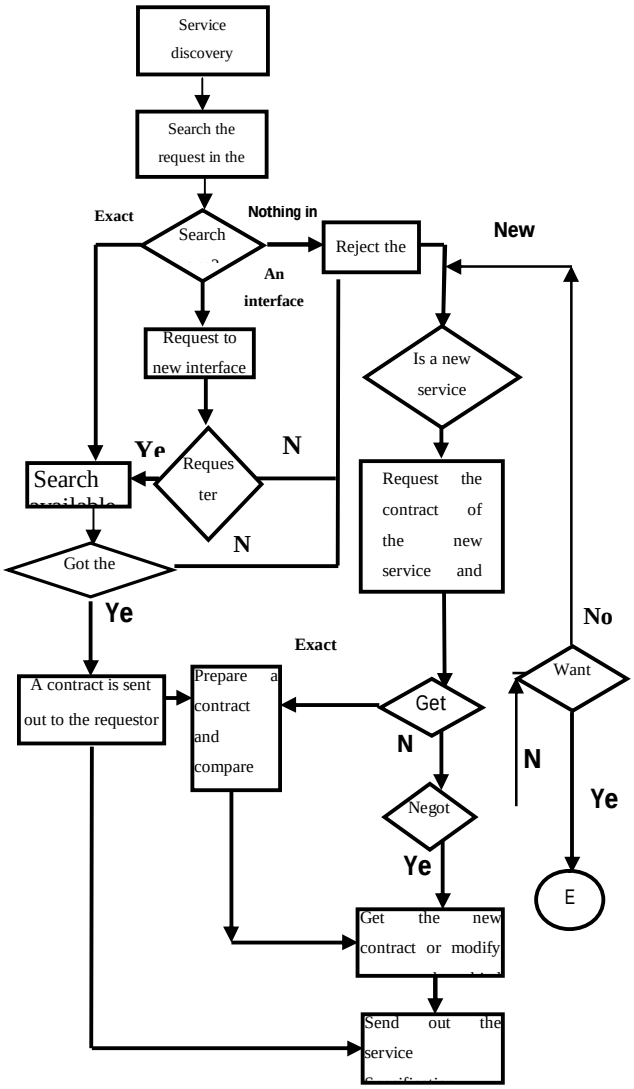

Fig1: flow chart for negotiation and new service thread

3. Cloud computing over SOA

a. Network Reliance: SOA is basically reliant on the network to unite the service supplier with the buyer. For Example, Web service protocols are used on internet protocols to cite software role spread transversely on the network. Underperforming networks can instill a huge brunt on the accessibility of web services to the customer.

b. Supplier Overhead: Actualizing all-purpose reclaimable software constituent for wide recipients utilizes more imaginations than evolving a smaller amount of general elucidation. The cost of regaining, therefore, swings to the service contributors, which repays it to the customers.

c. Business Measures: When several constituents are being formulated at the same time by individualist teams, it becomes substantial for the interface of a suppliers service to affirm to the terms of a consumer. Likewise, it aids everybody involved, if the interfaces alongside services have a little solidity in configuration and security access procedures. Selecting and transmitting a complete band of business measures is a reliable in coming near to help in business SOA assimilation.

d. Organizational Agility: It relates to SOA, where we are often pertaining to organizational agility, or the cognition to more rapidly getting used to a centralized organization's supplements to match their up to date necessities. An organization's demands of IT might alter over time for numerous factors, including alterations in the enterprise or organization, modifications in enterprise-wide describing requirements, adaptations in the ordinances, novel technologies in the lucrative business enterprise, endeavors to unite varied data accumulation resources, to meliorate the organization's functional impression, and several other rationalities.

3.1 Characteristics

Cloud computing has a variety of characteristics, with the main ones being:

- **Shared Infrastructure** — Uses a virtualized software model, enabling the sharing of physical services, storage, and networking capabilities. The cloud infrastructure, regardless of deployment model, seeks to make the most of the available infrastructure across a number of users.
- **Dynamic Provisioning** — Allows for the provision of services based on current demand requirements. This is done automatically using software automation, enabling the expansion and contraction of service capability, as needed. This dynamic scaling needs to be done while maintaining high levels of reliability and security.

- **Network Access** — Needs to be accessed across the internet from a broad range of devices such as PCs, laptops, and mobile devices, using standards-based APIs (for example, ones based on HTTP). Deployments of services in the cloud include everything from using business applications to the latest application on the newest smart phones.
- **Managed Metering** — Uses metering for managing and optimizing the service and to provide reporting and billing information. In this way, consumers are billed for services according to how much they have actually used during the billing period.

In short, cloud computing allows for the sharing and scalable deployment of services, as needed, from almost any location, and for which the customer can be billed based on actual usage.

4. Convergence of SOA and Cloud Computing

The shift towards services willalso leads to standardization. Thus, the components of software services can be tied together and carried out on several platforms over the network business purpose. The several functions involved are:

- **Network Dependence:** Both cloud computing and SOA count on a robust network to unite consumers and producers and in that sense, both have the identical initial morphological blemishes, when the network is not operating or is unavailable. A researcher has intricate on this concern by mentioning that "with gigabit Ethernet connections in local area networks, and progressively quick internet services; network operation has bettered to the extent where cloud computing looks like a feasible forgoing [1].
- **Forms of Outsourcing:** Both constructs require forms of contractual kinship and belief between service benefactors and service enjoyers. Reuse of an SOA service by a group of other systems is in effect an "outsourcing" of that capability to another organization. With cloud computing, the outsourcing is more conspicuous and frequently has a fully fruitful gusto. Storage, platforms, and servers are acquired from business benefactors who have economies of degree in providing those cater to vast addressees. Cloud computing allows the customer organization to leave the detailed IT administration issues to the service benefactors.
- **Standards:** Both cloud computing and SOA provide an organization with aspect to select common standards for network accessible capabilities. SOA has a rather constituted set of principles, with which to implement software services, such as representational state transfer (REST), simple-object access protocol (SOAP) and web services description language (WSDL), among many others. Cloud computing is not as mature, and many of the interfaces offered are unique to a particular vendor, thus raising the risk of vendor lock-in.

5. Service Models

Once a cloud is established, how its cloud computing services are deployed in terms of business models can differ depending on requirements. The primary service models being deployed are commonly known as:

5.1 Software as a Service (SaaS) — Consumers purchase the ability to access and use an application or service that is hosted in the cloud. A benchmark example of this is Salesforce.com, as discussed previously, where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud. Also, Microsoft is expanding its involvement in this area, and as part of the cloud computing option for Microsoft® Office 2010, its Office Web Apps are available to Office volume licensing customers and Office Web App subscriptions through its cloud-based Online Services.

5.2 Platform as a Service (PaaS) — Consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The operating systems and network access are not managed by the consumer, and there might be constraints as to which applications can be deployed.

5.3 Infrastructure as a Service (IaaS) — Consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but do not themselves control the cloud infrastructure. Also known are the various subsets of these models that may be related to a particular industry or market. Communications as a Service (CaaS) is one such subset model used to describe hosted IP telephony services. Along with the move to CaaS is a shift to more IP-centric communications and more SIP trucking deployments. With IP and SIP in place, it can be as easy to have the PBX in the cloud as it is to have it on the premise. In this context, CaaS could be seen as a subset of SaaS.

Traditionally a user needed to rest share some resources before he or she could be granted access to a larger pool of shared resources, a cloud computing user need only pay for the computing services. With cloud computing, new Internet services can be developed and deployed without capital acquisitions of hardware or large human integration expenses. Amazon launched its cloud offering back in 2006, known as the Elastic Computing Cloud or EC2 (see http://aws.amazon.com/ec2). Other companies, such as Google's App Engine (http://code.google.com/app engine) and Microsoft's Azure Platform (www.microsoft.com/windows azure), released their cloud platforms later in 2008.Open source cloud computing infrastructure systems have also been developed from university research groups, such as Eucalyptus.6 These cloud computing offerings provide different levels of abstraction and services to cloud users. Cloud computing

environments offer three major types of services: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS).7 For example, by leveraging IaaS, Amazon EC2 provides a computing unit that looks much like physical hardware. Users can control the entire software stack. On the other hand, while leveraging SaaS, Google App Engine requires strict restrictions on application architectures as it attempts to improve scalability and performance.

A single aspect of SOA is message passing. In realizing a workflow of services, messages are passed between services or between services and the service container. An issue related to security is the threat to the privacy of proprietary information. Not only is there a risk that messages could be intercepted, but there's also the threat that competitors might be able to infer business operations from message traffic. Cloud environments suffer the same problems with privacy.

6. Conclusion:

With the help of this new computing technique many organization develop distributive software system by combing or assembling basic services and these services come from different service providers , XML language is used for taking information and data from these providers service-oriented and cloud computing combined will indeed begin to challenge the way in which we think about enterprise computing. However, the potential for sharing could not only remove historical barriers but also encourage organizations to think more collaboratively.

In cloud computing user only need to pay for the computing services. With it if a user wants to develop or deploy any internet services than he/she can do that without any capital acquisition of hardware and or large human integration expense. As in SOA services provided for user or services are created for providers also but these services are controlled in cloud computing. Cloud computing does an emergence of a dynamic understand and need to control what and how clouds provides the service to consumers of these services.

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