



DSA Mechanism for Service-Based Applications

P.Gayathri¹, A. Rama²

Asst. Professor, Dept of Information Technology, Bharath Institute of Engineering & Technology, Chennai,
Tamil Nadu, India^{1,2}

ABSTRACT: Cloud computing, with its promise of (almost) unlimited computation, storage, and information measure, is more and more turning into the infrastructure of alternative for several organizations. As cloud offerings mature, service-based applications got to dynamically recompose themselves to self-adapt to dynamic QoS necessities. during this paper, we tend to gift a suburbanised mechanism for such self-adaptation, exploitation market-based heuristics. we tend to use an eternal double-auction to permit applications to make your mind up that services to decide on, among the numerous on supply. we tend to read associate application as a multi-agent system and therefore the cloud as a marketplace wherever several such applications selfadapt. We show through a simulation study that our mechanism is effective for the individual application likewise as from the collective perspective of all applications adapting at constant time.

1. INTRODUCTION

Self-adaptation, as an inspiration, has been around for {several} years in several domains like biology, chemistry, logistics, economics. Self-adaptively in computer-based systems is comparatively newer. a number of the primary references to self-adaptive computer code systems and by self-adaptivity in computer code systems, we tend to mean computer code that monitors itself and therefore the in operation setting and takes applicable actions once circumstances amendment. In net applications, service-oriented design has typically been used as a mechanism for achieving self-adaptivity. net services leave dynamic composition, that allows applications to modify services while not going offline. a standard instance of exploitation net services dynamically is applications living on the cloud, soliciting for computing power and information measure to be scaled up or down, looking on demand.

However, one in all the cloud's major merchandising points, operational flexibility, is of very little use if applications (or organizations) have to be compelled to indicate at sign-up time the type of services that they shall use. On Amazon, for example, a client specifies throughout sign in whether or not she desires a Hi-CPU instance or a customary On-Demand instance or a Hi-Memory instance. This assumes that associate application is in a position to forecast its demand for computing and storage resources accurately. However, this inability to forecast is exactly what the cloud claims to deal with through snap in computing power. this is often to not say that there are not any versatile, demand-based rating schemes out there. Amazon's Spot Instances is associate example of however cloud suppliers are attempting to versatile value their services in response to unsteady demand over time.

Applications that may adapt to unsteady costs are going to be ready to guarantee a stronger come back on investment. within the future, we tend to surmise that service rating can rely not solely on demand however additionally on extra attributes like performance, accessibility, responsibility, etc. Current implementations of public clouds chiefly specialize in providing simply scaled-up and scaled-down computing power and storage. we tend to ideate a a lot of refined situation wherever federate clouds with completely different specialised services collaborate. These collaborations will then be leveraged by associate enterprise to construct associate application that's self-adaptive by dynamic the particular net service it utilizes.

The notion of utilizing cooperative services to satisfy a business want isn't new in itself. the popularity of Agile Service Networks (ASN) that arise in fashionable business practices could be a testament to the current. As ASNs mature and



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 2, February 2015

dynamic composition becomes the norm, we tend to posit that applications that area unit composed of alternative applications can habitually adapt to dynamic QoS necessities.

II. LITERATURE REVIEW

2.1 Title: Selecting Skyline Services for QoS-Based Web Service Composition,

Author: M. Alrifai, D. Skoutas, and T. Risse,

Description: Web service composition enables seamless and dynamic integration of business applications on the web[1]-[3]. The performance of the composed application is determined by the performance of the involved web services. Therefore, non-functional, quality of service aspects are crucial for selecting the web services to take part in the composition. Identifying the best candidate web services from a set of functionally-equivalent services is a multi-criteria decision making problem[4]. The selected services should optimize the overall QoS of the composed application, while satisfying all the constraints specified by the client on individual QoS parameters. In this paper, we propose an approach based on the notion of skyline to effectively and efficiently select services for composition, reducing the number of candidate services to be considered[5]. We also discuss how a provider can improve its service to become more competitive and increase its potential of being included in composite applications. We evaluate our approach experimentally using both real and synthetically generated datasets[6].

2.2 Title: Global and Local QoS Constraints Guarantee in Web Service Selection

Author: D. Ardagna and B. Pernici,

Description: In Service Oriented systems, complex applications can be composed from a variety of functionally equivalent Web services which may differ for quality parameters. Under this scenario, applications are defined as high level business processes and service composition can be implemented dynamically by identifying the best set of services available at run time[7][8]. In this paper, we model the service composition problem as a mixed integer linear problem where local constraints, i.e., constraints for component Web services, and global constraints, i.e., constraints for the whole application, can be specified. Our approach proposes the formulation of the optimization problem as a global optimization, not optimizing separately each possible execution path as in other approaches. Experimental results demonstrate the effectiveness of our approach[9].

2.3 Title: Towards Decentralized Self-Adaptive Component-Based Systems,

Author: L. Baresi, S. Guinea, and G. Tamburrelli,

Description: This paper explores the use of dependence metadata for optimising composition in component-based parallel programs. The idea is for each component to carry additional information about how points in its iteration space map to memory locations associated with its input and output data structures[10][11]. When two components are composed this information can be used to implement optimisations that would otherwise require expensive analysis of the components' code at the time of composition. This dependence metadata facilitates a number of cross-component optimisations – in this paper we focus on loop fusion and array contraction. We describe a prototype framework, based on the CLoog loop generator tool, that embodies these ideas and report experimental performance results for three non-trivial parallel benchmarks

2.4 Title: Declarative Composition and Peer-to-Peer Provisioning of Dynamic Web server

Author: B. Benatallah, M. Dumas, Q.Z. Sheng, and A.H.H. Ngu,

Description: The development of new services through the integration of existing ones has gained a considerable momentum as a means to create and streamline business-to-business collaborations. Unfortunately, as Web services are often autonomous and heterogeneous entities, connecting and coordinating them in order to build integrated services is a delicate and time-consuming task[12][13]. In this paper, we describe the design and implementation of a system through which existing Web services can be declaratively composed, and the resulting composite services can be executed following a peer-to-peer paradigm, within a dynamic environment. This system provides tools for specifying composite services through statecharts, data conversion rules, and provider selection policies. These specifications are then translated into XML documents that can be interpreted by peer-to-peer inter-connected software components, in order to provision the composite service without requiring a central authority.



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 2, February 2015

2.5 Title: Towards Self- Awareness in Cloud Markets: A Monitoring Methodology

Author: I. Breskovic, C. Haas, S. Caton, and I. Brandic,

Description: Currently, the Cloud landscape is a fragmented, static and shapeless market that hinders the paradigm's ability to fulfil its promise of ubiquitous computing on tap and as a commodity. In this paper, we present our vision of an autonomic self-aware Cloud market platform, and argue that autonomic market platforms for Clouds can step up to the challenge of today's status quo. As our first steps towards achieving this vision, we present a market monitoring methodology, which includes a series of realistic market goals, sets of extractable metrics from a market platform and how to map (i.e. combine and transform) metrics to access goal performance such that autonomic adaption of the market could be undertaken. We have extended a known market simulator for distributed infrastructures (GridSim) with relevant sensors. To demonstrate the usefulness of our approach, we simulate a sudden cease in demand for goods in our market platform.

III. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM:

Composite web services are services that are composed of other web services. Several web applications are made by composing web services together. The effective QoS provided by such an application is a function of the QoS provided by the individual web services. Hence, if the application wishes to exhibit a different level of QoS, it can do so by changing its constituent web services. However, this is not an easy task. Identifying the optimal web service, for each task that the application performs is a hard problem.

3.1.1 DISADVANTAGES OF EXISTING SYSTEM:

- There is a further complication. As different jobs arrive, depending on the priority and QoS demanded, the application has to either scale up or down on each of those QoS attributes[14].
- Not only does it have to recalculate the best value-for-money services, but the set of Concrete Services that are available also changes with time. Since these services (possibly) belong to third parties, they may or may not be available or are available with different QoS or for a different price[15].

3.2 PROPOSED SYSTEM:

We would like to create a mechanism that allows multiple applications, constructed across a federation of clouds, to self-adapt. We chose a market-based approach to self adaptation, Not only because it is decentralized, but also due to its easy applicability to the problem domain. Services in the cloud are moving from a fixed-price package to a more flexible, auction-based approach. This enables a self-adaptive application to change the QoS exhibited by Switching to a different Concrete Service.

3.2.1 ADVANTAGES OF PROPOSED SYSTEM:

- The trading proceeds in two stages. In the first stage, the Market Agent matches the bids and asks based on their individual QoS values and shout prices. After matching, a provisional transaction is created. This provisional transaction enters the second stage.
- In the second stage, the Buyer Agent compares all the Asks returned as provisional transactions. The top-ranked Ask is selected and the other Asks are rejected. The Buyer Agent enters into a transaction with the Seller Agent of the selected Ask[11].

IV. MODULE DISCRPTION

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective. The implementation stage involves careful planning, investigation of the existing system and it's constraints on implementation, designing of methods to achieve changeover and evaluation of



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 2, February 2015

changeover methods. Implementation is the process of converting a new system design into operation. It is the phase that focuses on user training, site preparation and file conversion for installing a candidate system. The important factor that should be considered here is that the conversion should not disrupt the functioning of the organization[12].

De-centralized Modules:-

The proposed framework mainly used to analyze the dynamic values updated in various sites for example weather report, Stock ratings etc., in offline mode using web services technology. The main aspect of our framework is:

- Product Update
- Stock value Update
- Alert.

Product Update:-

To avoid the redundant usage of internet service during the retrieval phase of stock values for the product the web service technology is implemented. With the help this framework user can able to set alert for the stock information according to the custom limit[13][14].

The site administrator updates the product name and logo in available list. He has the authority to remove the product from the site and providing the accesses rights to the user.

Stock value Update:-

The site administrator will update the stock values with help of the web services technology. It can be viewed in offline mode also by the registered user. It helps to avoid the usage of network bandwidth consumption also reliable. The user can able to add required stock brand in the cart from the available list created by the administrator. User can also rate about the stock brand in the site it will update the overall rating value in the site user community[15].

Alert:-

The user can able to make custom alert for the product added in the chart. The administrator frequently updates the stock ratings from the parent site. If the value reached the user alert level then it will updated in the user personal alert page in offline mode itself. Any time the user can remove the product from the custom own chart.

V. FUTURE ENHANCEMENTS

The project has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Improvement can be appended by changing the existing modules or adding new modules.

VI. CONCLUSION

Cloud-based service-oriented applications have the potential to self-adapt their QoS, depending on demand. Using a market-based mechanism maps nicely to the real-world situation of unpredictable change of QoS requirements, costs involved in adaptation and adaptation by competing applications. As the number of possible concrete services increases, the scalability of the self-adaptive mechanism becomes important. We see that the market-based mechanism consisting of simple agents is able to adapt well and yet scales linearly to the number of concrete services. We also see that it is robust in the presence of differences in demand and supply of QoS. Applications implemented as an ASN can thus scale and adapt to the changing business requirements of QoS.

VII. FUTURE SCOPE

We have not modeled complex seller-side behavior, Specifically actions like deliberate violation of QoS to free up resources for making Asks with higher prices or misreporting of QoS available. Mechanisms like penalties and reputation management can be used to prevent seller agents from behaving dishonestly. Also, we have not modeled adaptation on the part of the market. Sellers that lie about their QoS or are generally unattractive for transactions may lower the reputation of the marketplace. Hence, the market could take steps to ensure that it is populated only with sellers that are likely to be sold. In future work, we aim to systematically add these modifications to observe their effect on the collective adaptation.



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 2, February 2015

REFERENCES

1. M. Alrifai, D. Skoutas, and T. Risse, "Selecting Skyline Services for QoS-Based Web Service Composition," Proc. 19th Int'l Conf. World Wide Web, pp. 11-20, 2010.
2. Udayakumar R., Khanaa V., Saravanan T., "Analysis of polarization mode dispersion in fibers and its mitigation using an optical compensation technique", Indian Journal of Science and Technology, ISSN : 0974-6846, 6(S6) (2013) pp. 4767-4771.
3. D. Ardagna and B. Pernici, "Global and Local QoS Constraints Guarantee in Web Service Selection," Proc. IEEE Int'l Conf. Web Services, pp. 805-806, 2005.
4. Bhuvanewari B., Hari R., Vasuki R., Suguna, "Antioxidant and antihepatotoxic activities of ethanolic extract of Solanum torvum", Asian Journal of Pharmaceutical and Clinical Research, ISSN : 0974-2441, 5(S3) (2012) pp. 147-150.
5. L. Baresi, S. Guinea, and G. Tamburrelli, "Towards Decentralized Self-Adaptive Component-Based Systems," Proc. Int'l Workshop Software Eng. for Adaptive and Self-Managing Systems, pp. 57-64, 2008.
6. Udayakumar R., Khanaa V., Saravanan T., "Chromatic dispersion compensation in optical fiber communication system and its simulation", Indian Journal of Science and Technology, ISSN : 0974-6846, 6(S6) (2013) pp. 4762-4766.
7. B. Benatallah, M. Dumas, Q.Z. Sheng, and A.H.H. Ngu, "Declarative Composition and Peer-to-Peer Provisioning of Dynamic Web Services," Proc. 18th Int'l Conf. Data Eng., pp. 297-308, 2002.
8. Sathyanarayana H.P., Premkumar S., Manjula W.S., "Assessment of maximum voluntary bite force in adults with normal occlusion and different types of malocclusions", Journal of Contemporary Dental Practice, ISSN : 1526-3711, 13(4) (2012) pp.534-538.
9. J.P. Brans and P. Vincke, "A Preference Ranking Organisation Method: The Promethee Method for Multiple Criteria Decision- Making," Management Science, vol. 31, no. 6, pp. 647-656, June 1985.
10. Udayakumar, R., Khanaa, V., Saravanan, T., "Synthesis and structural characterization of thin films of SnO₂ prepared by spray pyrolysis technique", Indian Journal of Science and Technology, ISSN : 0974-6846, 6(S6) (2013) pp.4754-4757
11. I. Breskovic, C. Haas, S. Caton, and I. Brandic, "Towards Self-Awareness in Cloud Markets: A Monitoring Methodology," Proc. IEEE Int'l Conf. Dependable, Autonomic and Secure Computing, pp. 81-88, Dec. 2011.
12. R. Buyya and S. Pandey, "Cloudbus Toolkit for Market-Oriented Cloud Computing," Proc. First Int'l Conf. Cloud Computing, pp. 22-44, 2009.
13. R. Buyya, C.S. Yeo, and S. Venugopal, "Market-Oriented Cloud Computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities," Proc. 10th IEEE Int'l Conf. High Performance Computing and Comm., pp. 5-13, Sept. 2008.
14. G. Canfora, M. Di Penta, R. Esposito, and M. Luisa Villani, "An Approach for QoS-Aware Service Composition Based on Genetic Algorithms," Proc. Conf. Genetic and Evolutionary Computation, pp. 1069-1075, 2005.
15. J. Cardoso, A. Sheth, and J. Miller, "Workflow Quality of Service," technical report, Univ. of Georgia, Athens, Mar. 2002.
16. T.Nalini, A.Gayathri, HVS Based Enhanced Medical Image Fusion, International Journal of Innovative Research in Computer and Communication Engineering, ISSN (Print) : 2320 - 9798 , pp 170-173, Vol. 1, Issue 2, April 2013.
17. S.Thirunavukkarasu, R.K.P.Kaliyapurthi, EFFICIENT ALLOCATION OF DYNAMIC RESOURCES IN A CLOUD, International Journal of Innovative Research in Computer and Communication Engineering, ISSN: 2249-2651, pp 24-29, Volume 1 Issue 3 Number 2 - Dec 2011.
18. K.G.S. VENKATESAN, Planning in FARS by dynamic multipath Reconfiguration system failure recovery in Wireless Mesh Network, International Journal of Innovative Research in Computer and Communication Engineering, ISSN(Online): 2320-9801, pp 5304-5312, Vol. 2, Issue 8, August 2014.
19. G.Michael, An Empirical Approach - Distributed Mobility Management for Target Tracking in MANETs, International Journal of Innovative Research in Computer and Communication Engineering, ISSN (Print) : 2320 - 9798 , pp 789-794 , Vol. 1, Issue 4, June 2013.
20. G.AYYAPAN, Malicious Packet Loss during Routing Misbehavior - Identification, International Journal of Innovative Research in Computer and Communication Engineering, ISSN(Online): 2320-9801, pp 4610-4613, Vol. 2, Issue 6, June 2014