

# A Survey on Profiling as A Service In Multitenant Cloud Computing environment

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## ABSTRACT

Cloud Computing integrated data, applications, users and servers on a vast scale and enables a global optimization of computing resources. However due to security threats from both inside and outside, security remains as a significant Challenge. All stakeholders need an efficient system that predicts any violation before it occurs.

Profiling-as-a-service architecture to characterize, understand and profile network traffic at multiple layer in multi-tenant cloud computing. Profiling-as-a-service provide an in depth understanding on traffic pattern Of cloud tenants, but also enhance the security of cloud computing by collaboratively detecting and filtering unwanted traffic toward cloud instance.

**Keyword:** - Cloud Computing, Profiling-as-a-service, Multi-tenant, and Security.

## 1. Introduction

### 1.1 Cloud Computing

Cloud Computing [8] is a collection/group of integrated data and network, hardware, software and internet infrastructure. In addition, the platform provides on demand service that are always on, anytime, anywhere and any place. Using cloud service we need to pay as per use. The various type of hardware and software services are available to general public, enterprises, corporations and business market. Gmail is the best example for cloud computing. When running on Gmail, the storage and software account doesn't exist on our computer but it is on our cloud.

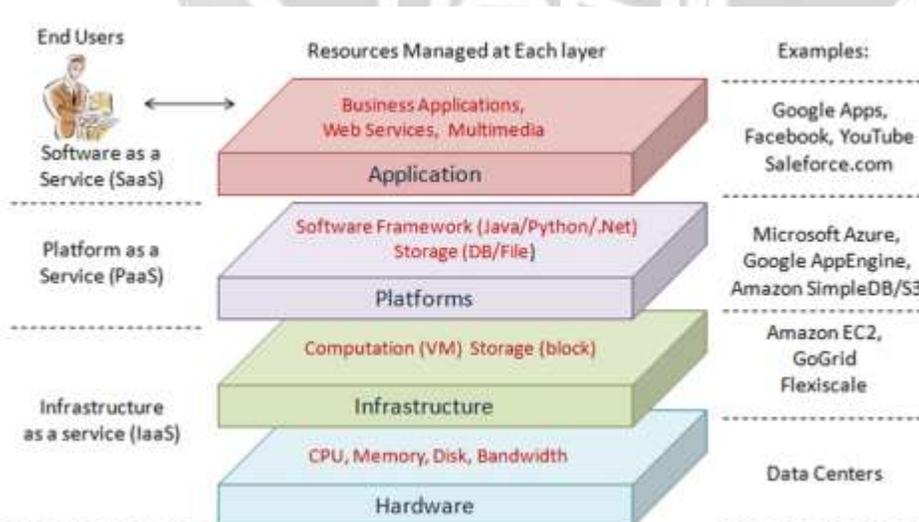


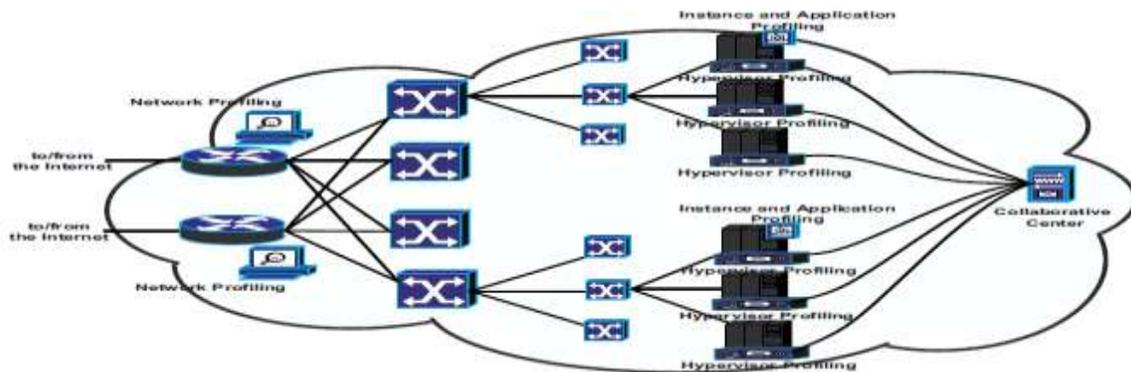
Fig -1: Cloud Computing Architecture [8]

**1.2 Security**

Security is considered as one of the main concerns in the adoption of the cloud computing model. Security issues in such an environment include service management (service provisioning and service execution), user access control (while using role based model or working in a hierarchical infrastructure), multiple access to services or resources, denial of service, memory and resource management. However data security and privacy are considered as one of the critical challenges in every information system and it is one of the major concerns in cloud computing research as well. Issues related to data security such as access, privacy, availability or integrity are the main research challenges for health care system in a cloud computing environment.

**2. Related Work**

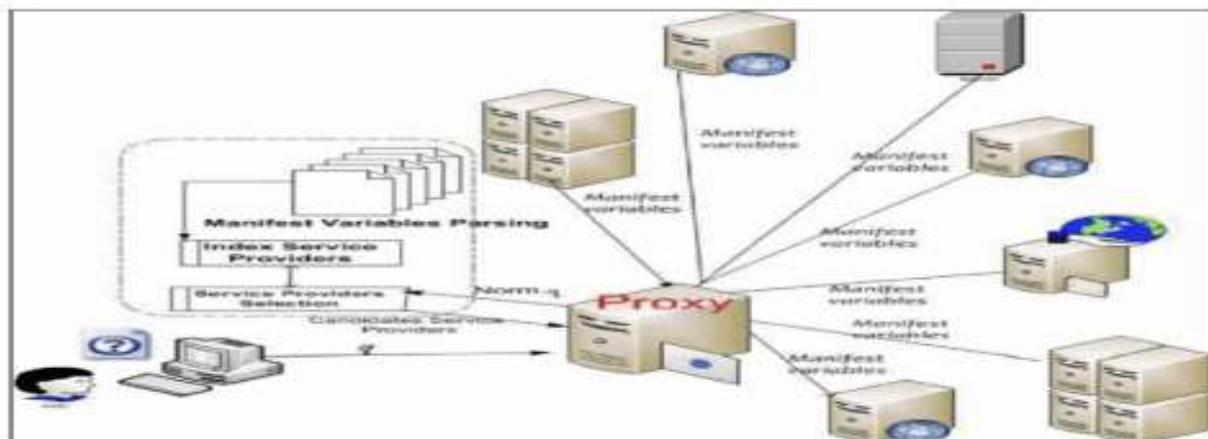
Kuai Xu, Feng Wang, and Lin Gu[1]propose to develop a profiling-as-a-service architecture to characterize, understand and profiling network traffic at multiple layer in the multi tenant cloud computing environment: Network routers, hypervisors, virtual instances and applications. The propose architecture also provide an in depth-understanding on traffic pattern on cloud tenants but also enhance the security of cloud computing



**Fig -2:** Architecture of layered profiling in cloud computing <sup>[1]</sup>

Profiling-as-a-Service architecture for establishing hierarchical traffic behavior profiles for instance at multiple layers-Network profiling, hypervisor profiling and instance profiling.

Prasad Pulikal, Claudio Giovanoli, Stella Gatzui Grivas[2] proposed improvement of finding suitable service within the Cloud Brokering system. In this service selection user search for a keyword and result will be 1000 query. Now the user has to filter this result according to requirement, data security and privacy.



**Fig -3 :** Brokerage based Cloud service selection <sup>[2]</sup>

An agent based framework for cloud service selection by ranking, benchmarking various cloud services through user feedback and third party benchmarking tools. This approach is to rank cloud service according to their performance and user feedback and then use this ranking for cloud service selection

Walayat Hussain, Farookh Khadeer Hussain, Omar Hussain, Elizabeth Chang[3] proposed SLA monitoring architecture could be any one of the three types: 1) trusted third party 2) trusted module at the provider side 3) trusted module at consumer side. An intelligent, profile-based SLA violation prediction model, from the provider's perspective.

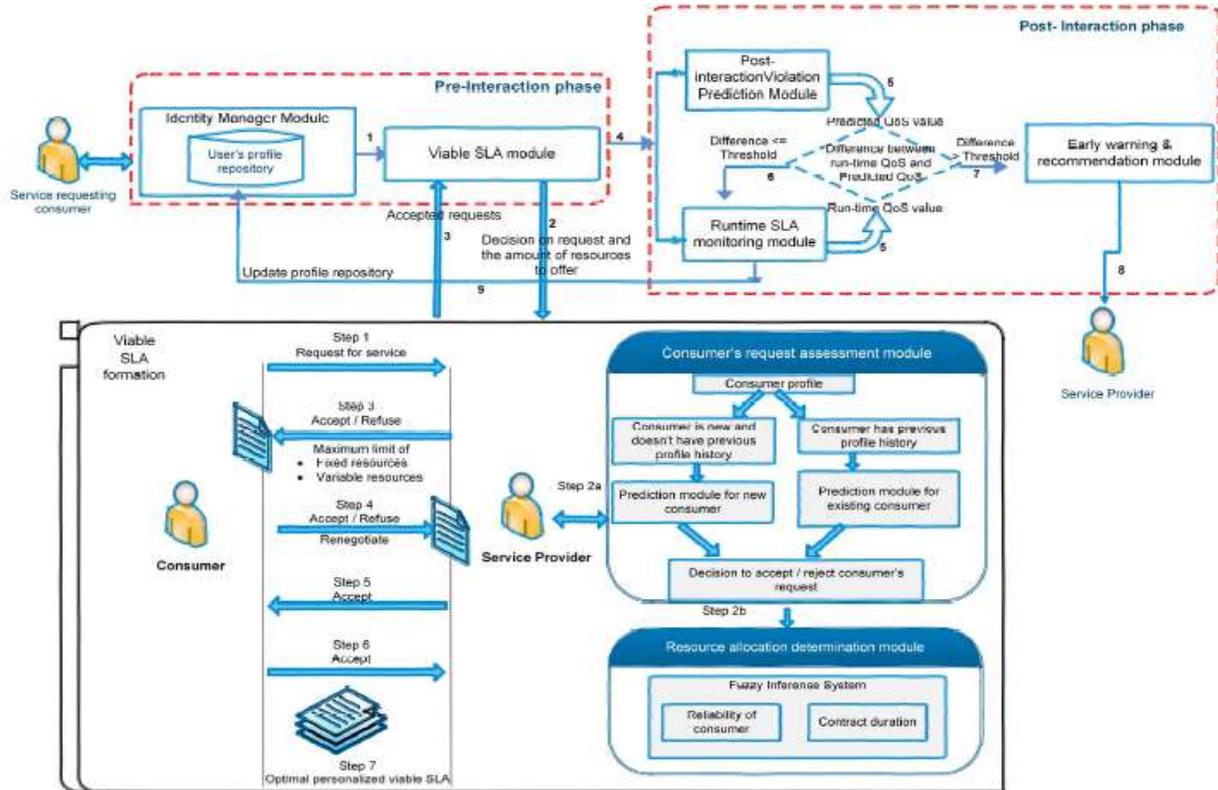


Fig -4: Consumer's profile based SLA violation prediction Architecture [3]

This Violation Prediction architecture divide in two phase 1) Post-interaction Phase and 2) Pre-interaction Phase

Ryan Chard, Kyle Chard, Bryan Ng, Kris Bubendorfer, Alex Rodriguez, Ravi Madduri and Ian Foster[4] propose a service that supports automatic profiling of application performance on different instance types to create rich application profiles that can be used for comparison, provisioning, and scheduling.

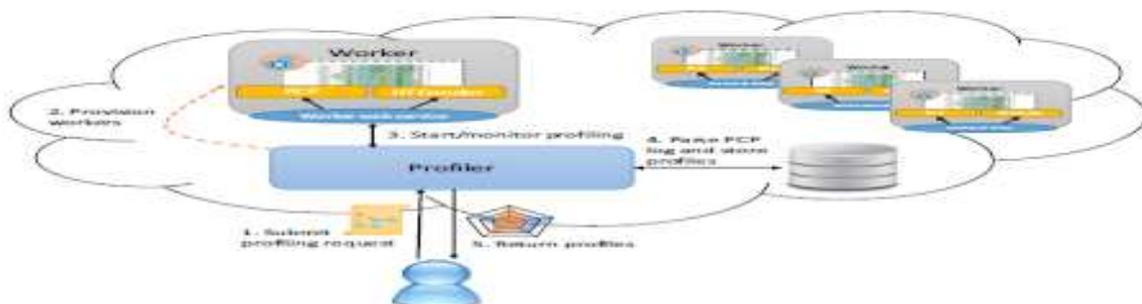


Fig -5: Profiling Service Architecture [4]

This profiling service is implemented as a multi threaded Python application. When a profiling job is requested the service creates a new thread that is responsible for overseeing the execution and monitoring of the tool.

Saravanan M and Manoj P, Smitha G B and Lakshmi V[5] proposed recommendation services are modeled using a newly proposed policy-based engine that combines information from subscriber's behavioral aspects of Mobile Telecom Networks (MTN) and Social Media (SM) inputs.

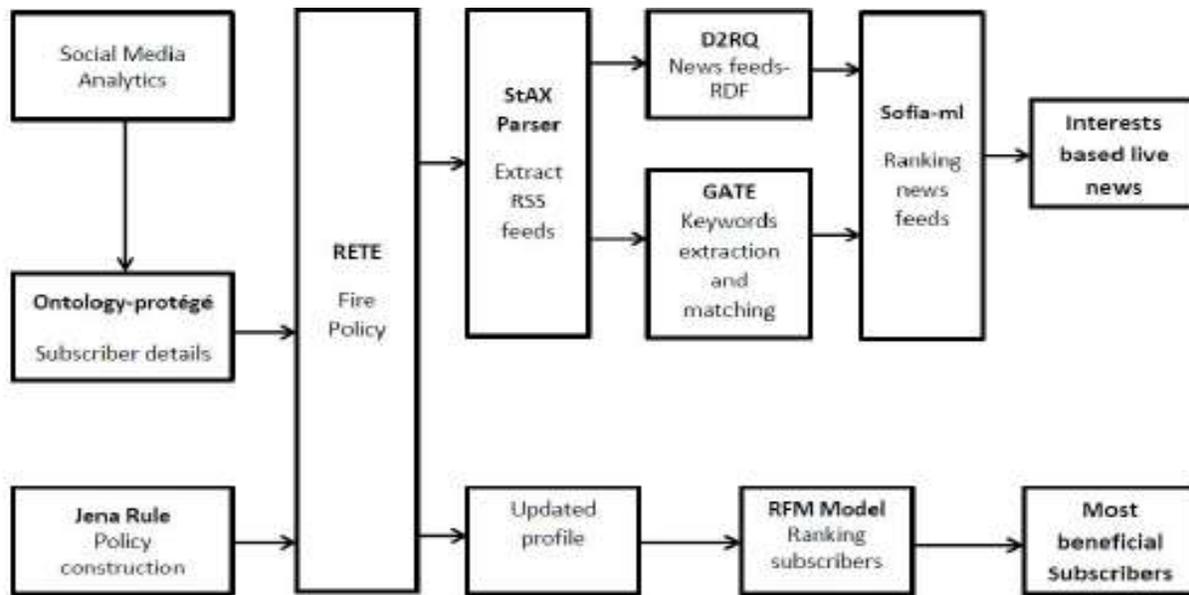


Fig -6: Enhanced GPSR architecture<sup>[5]</sup>

Aatish: The profile based recommendation engine that learning their recurrent and recent behavior and interests in various domains

### 3. CONCLUSIONS

In this dissertation focus on Profiling-as-a-Service infrastructure and build traffic profiles at multiple layer. And secure the data using SLA and create auto use profile and store the user profile in database for future service selection .Give the depth information of network traffic. To demonstrate the operational feasibility and the practical application of the profiling-as-a-service.

### 4. REFERENCES

- [1]. Kuai Xu, Feng Wang, Lin Gu, "Profiling-as-a-Service in Multi-Tenant Cloud Computing Environments", International Conference on Distributed Computing system Workshops,IEEE,DOI 10.1109,ICDCSW.2012.
- [2]. Prasad Pulikal, Claudio Giovanoli,"Profile based Service Selection for Cloud Brokering Systems with a focus on SaaS", Third International Conference on Enterprise Systems,IEEE,DOI 10.1109,ES.2015.
- [3]. Walayat Hussain, Farookh Khadeer Hussain, Walayat Hussain, Farookh Khadeer Hussain, "Profile-based viable Service Level Agreement (SLA) Violation Prediction Model in the Cloud", 10th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing,IEEE,DOI 10.1109,3PGCIC.2015.
- [4]. Ryan Chard, Kyle Chard, Bryan Ng, Kris Bubendorfer, Alex Rodriguez, Ravi Madduri and Ian Foster, "An Automated Tool Profiling Service for the Cloud", 16th IEEE/ACM International Symposium on cluster ,cloud and, Grid computing ,IEEE,DOI 10.1109/CcGrid.2016.57.
- [5]. Saravanan M and Manoj P, Smitha G B and Lakshmi V, "Aatish – A New Profile-based Recommendation Services for Mobile Telecom Network Subscribers", Second European Network Intelligence Conference IEEE,DOI 10.1109/ENCI.2015.32.

- [6]. Anthony O. Ayodele, Jia Rao, Terrance E. Boulton, "Performance Measurement and Interference profiling in Multi Tenant Clouds", 8<sup>th</sup> IEEE International Conference on cloud computing, IEEE,DOI 10.1109/CLOUD.2015.128
- [7]. Byung Chul Tak, Youngjin Kwon, Bhuvan Urganekar"Resource Accounting of Shared IT Resources in Multi-Tenant Clouds", 8<sup>th</sup> IEEE International Conference on cloud computing, IEEE,DOI 10.1109/TSC.2015.2453980
- [8].Qi Zhang · Lu Cheng · Raouf Boutaba"Resource Cloud computing: state-of-the-art and research challenges", J Internet Serv Appl (2010) 1: 7–18,DOI 10.1107/s13174-010-0007-6
- [9]. Zheyuan Liu, Dejun Mu, "Analysis of Resource Usage Profiling for MapReduce Application Using Hadoop on Cloud" IEEE ,978-1-4673-0788-8/12/2012IEEE.

