A Survey on Real Time Load Analysis Using Profiling as a Service

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Abstract

- *Cloud Computing is emerging technology nowadays. It integrates data, applications, users and servers on a vast scale and enables a global optimization of computing resources. Usually, a cloud has a large number of resources on data centers that are geographically spread. Such resources must be continuously monitored. Now a days as the usage of cloud is increased need to manage the resources efficiently. So in this paper given a survey of profiling architecture and based on that monitoring the resources on cloud and make it self-learning.*

Index Terms—*Profiling, Cloud monitoring, self-learning*

I. INTRODUCTION

Cloud computing integrates data, applications, users and servers on a vast scale and enables a global optimization of computing resources. Cloud computing is "On demand delivery of infrastructure, applications, and business processes in a security-rich, shared, scalable, and based computer environment over the Internet for a fee"[6]. It is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand.

Profiling ("program profiling", "software profiling") is a form of dynamic program analysis that measures, for example, the usage of particular instructions, or the frequency and duration of function calls. A device's profile is rich in the sense that the information can be used to identify a physical device in the cyber space, bringing about many benefits. One advantage is to help system administrators with security auditing, discover and patch servers to preserve device security in the cyber-space. It also helps forensic and track individual devices on the Internet. For instance, we can provide an evidence to show that whether given device was involved in a recorded event or not. The last but not least is that network measurement statistics can be improved by detailed information of devices.

To properly manage the complex scenarios resulted from the adoption of the cloud computing paradigm, some crucial tasks take place; cloud monitoring is one of them, key to this paper. Cloud monitoring offers to both InPs (infrastructure providers) and SPs (Service Providers) means to observe the granted/allocated, virtual/physical re-sources. Through monitoring, can scale up and scale down the Vms.

II. Related Work

First paper proposed to develop a profiling-as-a-service architecture to characterize, understand and profile network traffic at multiple layers in the multi-tenant cloud computing environment.

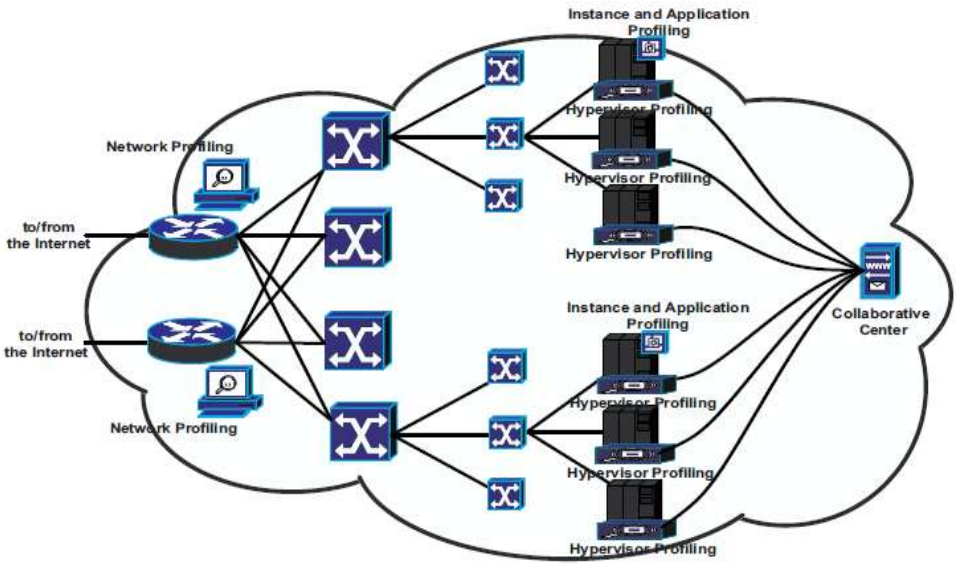

Fig. 1. Architecture of layered profiling in cloud computing[1].

The proposed architecture will not only provide an in-depth understanding on traffic patterns of cloud tenants, but also enhance the security of cloud computing by collaboratively detecting and filtering unwanted traffic towards cloud instances. It consists of four system components that build upon each other to establish profiling as-a-service in the cloud: first is a layered approach of profiling network traffic of cloud instances, second is behavior models and structural models based on communication patterns of cloud instances, third is a collaborative solution for detecting unwanted traffic in the cloud, last is a profiling-aware sampling algorithm for improving the robustness.

Second paper proposed 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. This service can dynamically provision cloud instances, automatically deploy and contextualize applications, transfer input datasets, monitor execution performance, and create a composite profile with fine grained resource usage information.

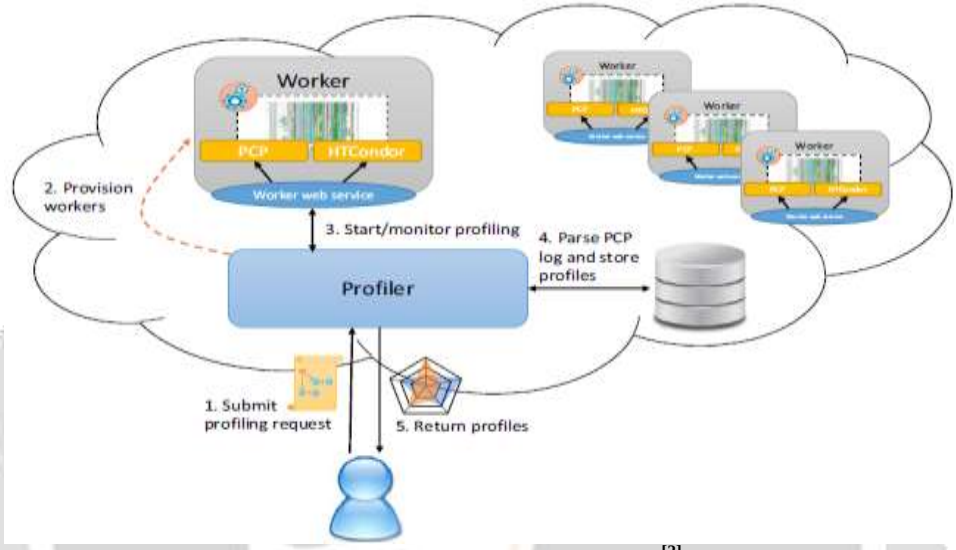

Fig.2 Profiling service architecture[2].

The profiling service is implemented as a web application. As shown in Fig.2, it includes the profiling web service, a reliable database (hosted on AWS RDS), and a dynamic pool of provisioned worker nodes, each with a management web service for control and monitoring tool execution. The 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. The thread will provision EC2 instances, stage/deploy the workload and tool, monitor execution, parse monitoring logs, and store the profile in the database. Each worker node is deployed with a dynamic web service that allows the provisioning service to control and monitor the executed tool. This contextualization process installs and configures the worker web service, HTCondor, and PCP, as well as mounting the shared file system.

Applied this approach to several genomics tools and shown that the resulting profiles can significantly improve performance and cost in real-world cloud provisioning scenarios.

Third paper proposed a scalable framework for physical device profiling. They implement a prototype system and use it to profile Webcams and industrial control device.

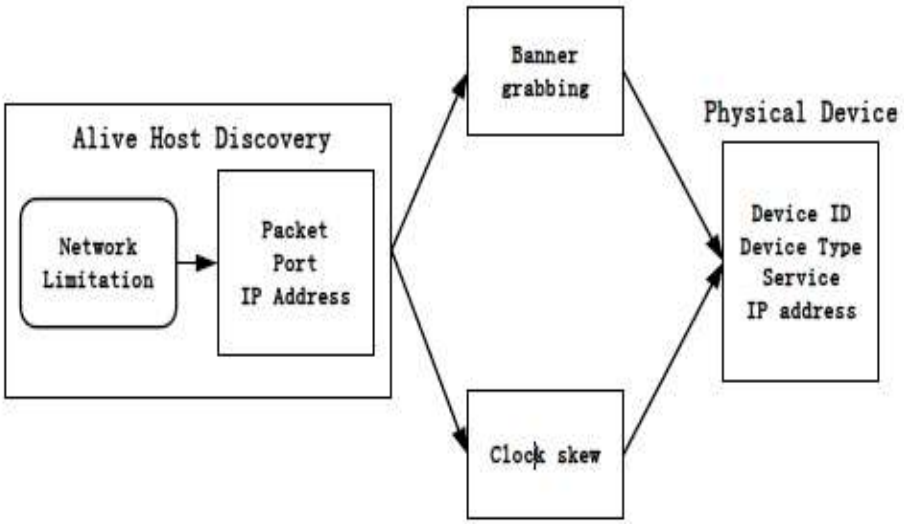

Fig.3 Framework for extracting physical device information[3].

Here used live host discovery to find out active hosts and used banner grabbing to extract device type and its services. We used clock skews to label a physical device's ID. The results show that Webcam profiles can be effectively extracted and identified in real time. They have implement a prototype system and run it on Amazon EC2 to extract information of Webcam devices and physical control devices. And deployed it on the cloud server and used it to detect 4 billion IP addresses to profile 1.2 million Webcam devices and 60 thousand physical control devices in 20 hours.

Forth paper proposed improvements on the process of finding a service within the Cloud Brokering Systems(CBS) by using an innovative approach towards profiling the IT and Cloud services of an Enterprise Customer. The main aim of this research was to see if having a profile of the Cloud Consumer could have a positive effect on the process of searching and discovery of Cloud Services.

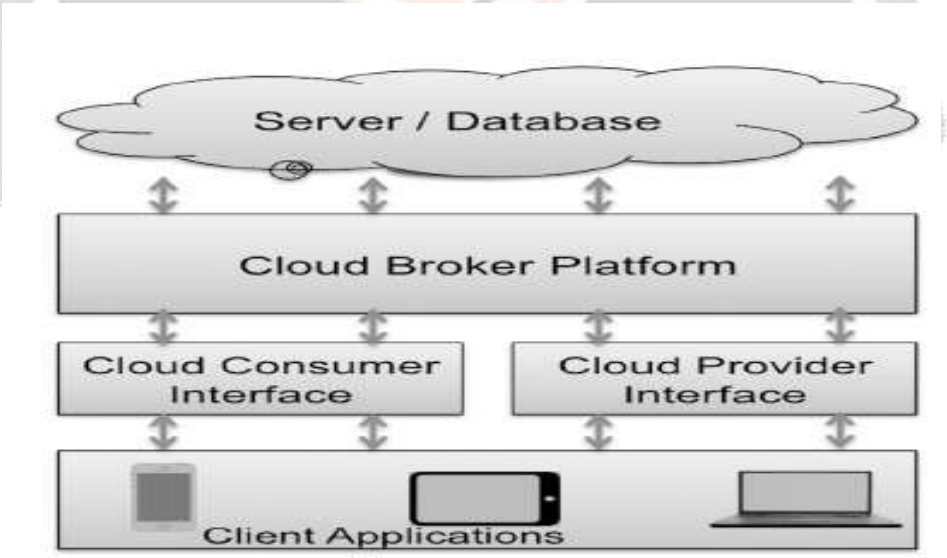

Fig.4 Prototype application architecture[4].

To analyze the model and verify the process of creating and using a profile within a cloud brokerage system they create a prototype. Proposed Cloud Consumer Profile called the "Enterprise Information Technology Profile" or EITP, the ways to create it, manage it and make it interoperable across various Cloud Service Brokerage Platforms.

[5] In fifth Paper, author proposed an overview on cloud monitoring and a comparison among relevant cloud monitoring solutions. In complement, analyze trends on monitoring of cloud computing environments and propose future directions.

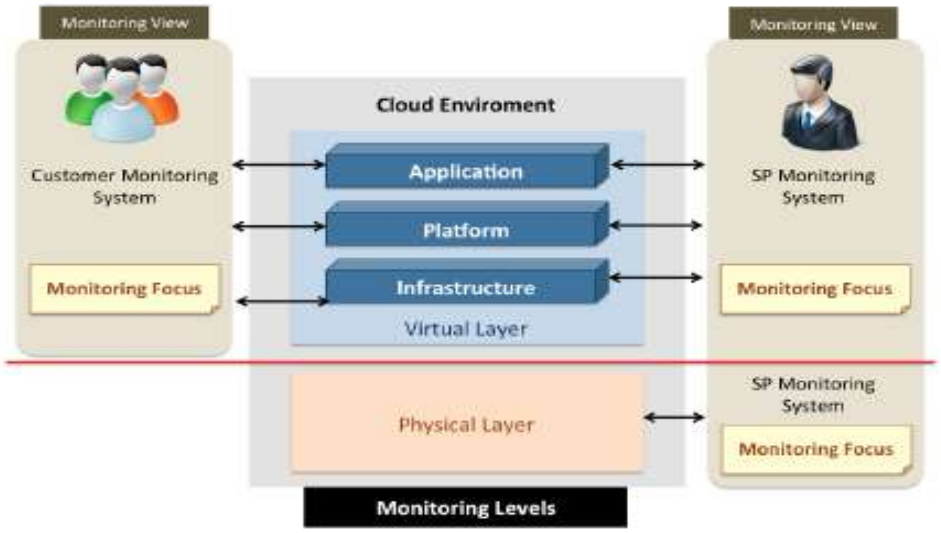

Fig.5 Cloud monitoring structure[5].

Above fig.5, shows Cloud monitoring structure, depicting the cloud models that compose a cloud, monitoring views to both SPs and customers, and monitoring focus. In this scenario, monitoring focus has several goals. In general, these goals are reached by monitoring solutions that are developed address specific monitoring necessities. Thereby, cloud monitoring solutions designed to cope with specific abilities could be complemented by other solutions, resulting in a complete solution for cloud monitoring.

III. CONCLUSION

In first paper proposed to develop a profiling as-a-service infrastructure and build traffic profiles of cloud instances at multiple layers for gaining an in-depth understanding of network traffic in the cloud. In second paper many technical challenges involved in deploying tools across a wide variety of instances types. This flexibility is both a blessing and a curse. In third paper proposed a scalable framework for extracting device information in the Internet space. In forth one is proposed to identify ways of supporting a Cloud Consumer Profile to make intelligent decisions for Cloud Service Selection. In last one presented an overview on cloud monitoring aiming to distinguish the concepts of cloud monitoring requirements and cloud monitoring abilities. By implementing the proposed Profiling model we will scale up/down virtual machines and can efficiently utilize and use the resources.

IV. REFERENCES

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