Design of On-Demand Analysis for Cloud Service Configuration using Related-Annotation

Hyogun Yoon' , Hanku Lee'•[2`],
' Center for Social Media Cloud Computing, Konkuk University, Seoul, Korea
[2] Department of Internet and Media, Konkuk University, Seoul, Korea
{kosher, hlee} @konkuk . ac.kr

Abstract. Individualized cloud services construct various forms of services for users and require a service procedure appropriate to the relevant service circumstance. Thus, to provide individualized cloud services is to develop an analytical model of service on-demand using information of users' circumstances and usages. As such, this paper presents an analytical model of users' service on-demand for the construction of cloud services. In order to analyze each user's service on-demand, we collect information of network circumstances, service history, service processing, and cloud service resources to classify it based on each user's state. The classified information tags annotation to be identified on the basis of each state. And, the relatedness of annotation with the cloud service resources required earlier for users is analyzed. With the analyzed relatedness, cloud services produced in the Live Mashup form are constructed, and information, annotation, and relatedness used for the service on-demand analysis by a knowledge expression engine are recorded and managed in templates.

Keywords: Cloud Service, On-Demand, Personalized Service, Annotation

1 Introduction

It is possible for cloud computing to provide various applied services in accordance with individual service devices by quickly and easily constructing individual applied services with massive computing power. Also, this enables the construction of the optimized customized services in a user's own space. Due to this, the development of an analytical model of service on-demand is required that analyzes the patterns of users' service use. Also, a parallel service analysis that is not included in the virtualization of services within various forms of cloud platforms. And, based on its results, cloud resources needed for services are connected with virtualizing modules. By doing this, services using cloud computing can be constructed in harmony with massive service resources like IaaS(Infrastructure as a Service), PaaS(Platform as a Service), SaaS(Software as a Service), and applications[1][2][3][4].

Thus, this paper proposes an analytical model of service on-demand for the construction of individualized customized cloud services. The proposed model collects, with collecting agents, meta-information needed for the analysis of users' service log information and service circumstances in the existing cloud computing

environments. The collected information is classified in class units, and the annotation for the on-demand analysis is tagged. The tagged information sets up the relatedness with service resources in order to process services done in cloud computing. And, the relatedness with services are reinterpreted by analyzing service on-demand by means of the knowledge recommendation algorithm resulted from the combination of the knowledge expression engine and the recommendation algorithm. With the analyzed relatedness, cloud services are constructed on the basis of the knowledge information expressed by means of the cloud service library built in the Live Mashup form. And, the used information is recorded with annotation and relatedness included in the meta-information, and managed in a template structure. This done, quick cloud service construction is possible with access to new regions or new users.

2 A Model of Cloud On-Demand Analysis

The proposed analytical model of user on-demand a model of service analysis for providing, in real time, service resources needed for service template production and service construction in order to provide users with customized individualized services at the monitoring stage in a cloud system. And, this model is constructed in a frame structure of service processing appropriate to various cloud networks and system environments. Figure 1 is the architecture of the proposed analytical model of user on-demand.

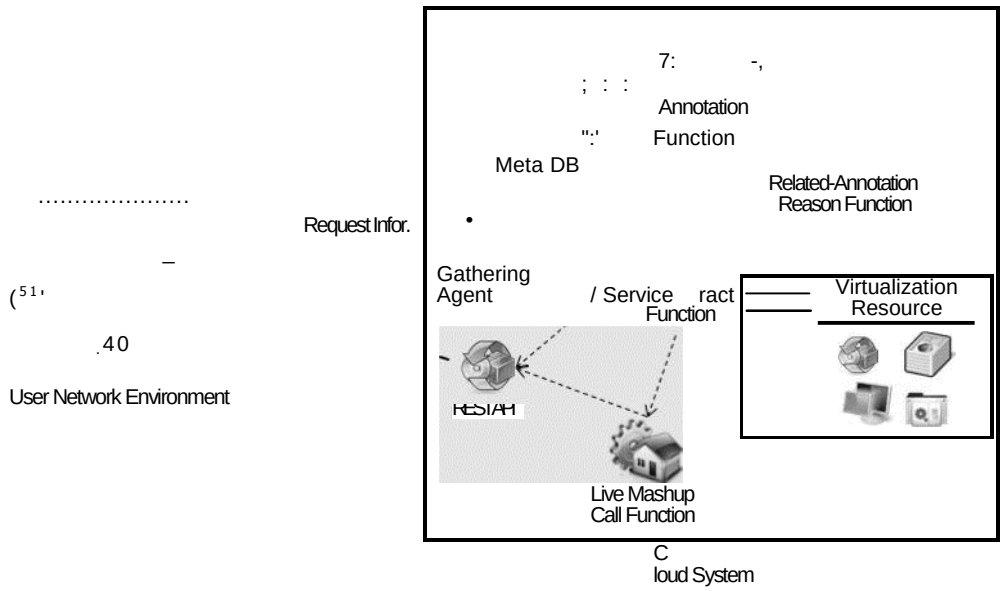

Figure 1. Architecture of the proposed model for user on-demand

In order to analyze on-demand, cloud computing secures from DB the location information obtained by GPS simultaneously with the user's verification and the information of the service networks of relevant areas by executing collecting agents. And, it constructs meta-DB by securing the information of the user's

previous service history, of the services requested earlier, and of the errors occurred at the submission of services. The meta-DB assigns class IDs by combining location information and time information, classifies relevant information, and tags the annotation about circumstantial information. The annotation classifies the services used by users at each location, and records services and contents with the highest scores by processing the classified information by rank. This process is done by the annotation modeling function that defines the annotated information model. This way, the annotated information defines the relatedness with the provided cloud service resources to evaluate the interrelationship with the annotation information with the greatest score. For the purpose of this, the Bayesian Neural Network is used. With the Bayesian Neural Network, it is possible to establish a learning model for agents for users by extracting mutually betraying properties with which non-typical inference is possible. This process is done by the related-annotation inference function.

The yielded interrelationship inference information is handed to the cloud service extract function for extracting cloud service instances. And, with relatedness, service on-demand is analyzed and the relatedness with services is reinterpreted by means of the knowledge recommendation algorithm resulted from the combination of the knowledge expression engine and the recommendation algorithm. Also, the user management module in the cloud monitoring system identifies the information of the states of the user's circumstantial devices and extracts contents necessary for the services. The services extracted via such a process constitute IaaS and PaaS resources through the cloud live mashup service. The structure of cloud live mashup can strengthen the connectedness with the cloud service contents which are extracted from what exist in the REST API form that includes the cloud service library. Also, the best information structure expressing users' on-demand for services is equipped. And, the used information is recorded with annotation and relatedness included in the meta-information, and managed in a template structure. This done, quick cloud service construction is possible with access to new regions or new users. And, customized services can be provided in accordance with users' situations and service states.

3 Conclusions

In cloud computing here individualized services are possible, the analysis of users' service on-demand and usage patterns appears as an important issue for the extension of cloud services and provision of customized services. The analytical model of service on-demand for the proposed cloud services is designed to measure the interrelationship with services by applying annotation to the analysis of users' service states and perform motions that improve the individualized service structure. And, it aims to efficiently distribute the physical and logical resources applied to the individualized cloud services. This done, users can be provided with service resources appropriate to their circumstances, and customized services subject to users' service environments rather than structures

subject to devices can be constructed. And, service providers can maintain and monitor stable services by efficiently running systems for cloud service users. Also, because they can systematically analyze patterns of users' service usage, system developers can further carry out the development of customized service contents and the improvement of agents necessary for service information collection. Future research should construct a system necessary for service processing and improve it by connecting the proposed model with the monitoring system of the open cloud system.

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