An Enterprise Mashup Integration Service Framework for Clouds

Siddesh G. M., Jawaharlal Nehru Technological University Hyderabad and M. S. Ramaiah Institute of Technology, India
Srinivasa K. G., M. S. Ramaiah Institute of Technology, India

ABSTRACT

With an advent of gaining popularity in cloud computing, there is a huge demand in ad-hoc services by the end users. These ad-hoc services cannot fully be provided by a service provider; hence Cloud mashup is a solution for this requirement. Cloud mashup is technology where end users can integrate different services of cloud service providers and create their own customized ad-hoc services. This paper proposes an efficient enterprise cloud mashup framework which supports dynamic composition of services to create a new service to the end users. The proposed framework is composed of an adapter, widgets, widget library and a mashup constructor module. Even a non technical end user can easily generate their own customized service on a cloud platform. Experiments reveal that the proposed framework is an efficient enterprise with cloud mashup service integration framework.

Keywords: Cloud Computing, Mashup, Service Integration, Web Service, Widget

INTRODUCTION

Cloud computing is leading to a exemplar shift in the way the research and business domains have started outsourcing their IT and computational needs to datacenters rather than maintaining their own infrastructure (Buyya et al., 2009). The main idea is to offer elastic access to dynamically provision IT resources on a pay-on-use basis to service users (Wu et al., 2010). Cloud users are able to access the services of cloud from anywhere in the world on demand. Hence, cloud computing can be classified as a new paradigm for the dynamic provisioning of computing services, supported by state of the art data centers containing ensembles of networked Virtual Machines (Buyya et al., 2010).

In essence, cloud computing results in commoditization of typical computing resources which are available as a service. There remains a various concerns to address and that could help accelerate the transaction (Buyya et al., 2010). The cloud service composition is designed based on the specific user requirements. These services cannot be customized on the fly, since it involves long lifecycle process (Ranabahu et
al., 2009). There is a need for new approach to overcome these issues and even non technical end users can integrate flexibly different services to generate a highly customizable service (Wulf & Jarke, 2004).

Mashups, a new generation of Web based applications, seem to adequately fulfill the individual and heterogeneous requirements of end users and to foster End User Development (EUD) (Hoyer & Stanoevska-Slabeva, 2009). The Mashup and the Cloud Computing worlds are strictly related because very often the services combined to create new Mashups follow the SaaS model and, more in general, rely on Cloud systems (Stecca & Maresca, 2010).

The use of Web 2.0 technologies with the SaaS principle is imposing widgets as a new means to exploit and integrate information over the web. The idea is that disparate data are accessed remotely through service-based interfaces and can then be freely re-combined by the user on his browser. These assemblies, like iGoogle, are often called mashups and let users decide the information of interest and how to organize it on the browser with no particular programming skills and no significant effort (Matteo Albinola et al., 2009). This paper focuses in integrating this new style of web technology with emerging cloud based services.

This paper proposes an efficient mashup service integration framework for cloud environments, which helps end users to generate highly ad-hoc customized services. Proposed framework offers: adapter- translates data from the source format to the required target format, widget- creates mashup process, widget library- a widget store, mashup constructor- wiring of different widgets and executing constructed mashup service in achieving customized service.

The rest of the paper is organized as follows: the upcoming section discusses on Related work of the proposed topic, followed by section which proposes the architecture on cloud based mashup service integration framework, next we discuss elaborately on different components of proposed framework, afterward a section defines an sequence diagram explaining the sequence of operations performed to provide services to clients, the next section discusses an case study on proposed enterprise cloud mashup architecture and which leads into a section that presents various experiments in analyzing the performance of proposed model, finally, the last section concludes the topic by summarizing the features of the proposed framework and the scope for future work.

RELATED WORK

Mashup is an upcoming web technology that allows users to come up with new services by integrating the existing services. There are wide ranges of contributions related to mashup integration service framework proposed both in industry and research domains. Google Mashup Editor (Google, 2009) is a developer-oriented Web 2.0 development environment that excels in integrating Google Services, such as Google Maps and Google Calendar. Yahoo Pipes (Yahoo!, 2011) is tailored to power users that are accustomed to XML data such as RSS feeds. The framework does not require programming skills, but offers a set of simple action units that can be visually combined using “pipe” connections. Microsoft Popy (Griffin, 2008) is a very powerful tool that can be used to create different kinds of mashups. The goal of the work was to provide an environment that could be used by everyone. Intel Mash Maker (Ennals, 2010) is a simple tool that is tailored towards high-level users. It specializes in the creation of Web pages that combine information from diverse sources. IBM Mashup Center (IBM, 2011) is an enterprise mashup platform enabling the rapid creation, sharing, and discovery of reusable application building blocks (widgets, feeds, mashups) that can be easily assembled into new applications or leveraged within existing applications - with the governance and security IT requires. Mashlight (Matteo Albinola et al., 2009): a lightweight framework for creating and executing mashups that combines these two worlds. Indeed, it provides users with a simple means to create “process-like” mashups using “widget-
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