

## E-COMMERCE PAYMENTS WITH CLOUD SERVICE MBAAS

*Aliyev Alakbar, Samadov Ramin*

Baku State University, Baku, Azerbaijan

### Abstract

*This paper describes creation of the algorithm of MBaaS platform of Cloud Computing. This allows developers to save time and money by giving up the development of the server, and focusing on the application functionality. This service will help programmers to write modules for electronic payments easier than without MBaaS service.*

### Аннотация

*В работе рассмотрены создания алгоритма платформы MBaaS. Описанный функционал поможет сэкономить время и деньги, следовательно, программисты будут больше заняты созданием функциональности мобильного приложения. Данный сервис облегчит создание электронных платежей в мобильных приложениях.*

**Introduction.** Every day we use new Cloud Services that help us to satisfy our day-to-day needs. Cloud Services refer to the delivery of computing services over a proprietary network or the Internet. Cloud computing consists of three different types of service provision. In each case, the services are hosted remotely and accessed over a network (usually the internet) through a customer's web browser, rather than being installed locally on a customer's computer. Therefore, it gives us big opportunities to use any software on any device.

There are three types of Cloud Computing:

Firstly, SaaS (software as a service) refers to the provision of software applications in the cloud. Secondly, PaaS (platform as a service) refers to the provision of services that enable customers to deploy, in the cloud, applications created using programming languages and tools supported by the supplier. Thirdly, IaaS (infrastructure as a service) refers to services providing computer processing power, storage space and network capacity, which enable customers to run arbitrary software (including operating systems and applications) in the cloud.

These three elements are together referred to as the cloud computing 'stack'. The supply of IT services in the cloud has been enabled both by the evolution of sophisticated data centers and widespread access to improved bandwidth. These technical advances mean that services may be hosted on machines across a wide range of locations but, from the customer's perspective, they simply originate in the 'cloud'. The cloud model enables customers to access, from any computer connected to the internet (whether a desktop PC or a mobile device), a multitude of IT services rather than being limited to using locally installed software and being dependent on the storage capacity of their local computer network. This model of IT service provision is one that is growing exponentially. It is estimated that one third of all revenue generated in the software market today relates to the delivery of cloud computing services, and that the value of the UK cloud computing market could reach around £10.5 billion in 2014, up from £6 billion in 2010[1].

**Electronic Payment.** Electronic payment is a subset of an e-commerce transaction that includes electronic payments for buying and selling goods or services offered through the Internet. Generally we think of electronic payments when referring to online transactions on the internet. There are actually many forms of electronic payments. Electronic payment systems have been intensively studied in recent years. Generally speaking, e-payment systems can be classified into two categories: the systems with on-line verification and the systems with off-line verification.

The former establishes security under the principle of prevention before-the-fact while the latter's security is based on the principle of detection after-the-fact [2]. On-line systems are less risky, thus more likely to be adopted by the business community. A critical issue for on-line systems is how to make a transaction fair to each transacting party so that neither party can gain

advantages over the other party in a given transaction. This can be addressed with a fundamental technique of fair on-line verification. In this paper, we are creating new algorithm for making on-line verification with MBAAS service, in which the customer gives verifiable encryption of the digital money to the shop for on-line verification, instead of giving the shop the money itself. The paper not only shows the principle of applying verifiable encryption to e-payment systems, but also shows a program with examples of the code [3].

Backend-as-a-service (BaaS) is a cloud computing service model that serves as the middleware that provides developers with ways to connect their Web and mobile applications to cloud services via application programming interfaces (API) and software developers' kits (SDK). Compared to other service models in the cloud computing environment, BaaS is rather new and there is a limited number of available providers. BaaS allows programmers not to worry about the processing of the standard functions, as the logic of processing functions has already been implemented in the BaaS service. The only thing that is necessary to the programmer is to write a unique front end. Thus, the gain in time in a software implementation is increased significantly. Mobile Backend as a service (BaaS) is a BaaS technology in mobile devices. The difference between BaaS and MBaaS is just in that MBaaS is produced only for mobile applications. Thus MBaaS is an integral part of the BaaS service.

**MBaaS service for E-Commerce payments.** Mobile application allows customers to choose products with categories of products, prices and their descriptions. The mobile application has to have an access to the MBaaS service. So finally, the algorithm of electronic payments when using MBaaS service looks as follow:

Step 1. Client selects a product and is ready to pay for the purchase with Mobile application by pressing the Checkout.

Step 2. Mobile application calls payment module of MBaaS service.

Step 3. MBaaS service registers a transaction in Card Processing (indicates the amount, currency, IP address of a client, receiving transaction identifier in response).

Step 4. MBaaS service, readdresses customer into Web Client of Mobile Phone (with transaction identifier being specified) by opening the secured by the certificates (https) Card Processing payment server in order to enter card data.

Step 5. Once card data is entered, the following operations are performed, because of BaaS service supports 3D Secure. Once card data, which supports 3D solution, is entered, client authentication takes place as part of 3D Secure. The results of authentication are communicated to Card Processing payment system.

Step 6. Customer's card doesn't support 3D Secure. In this instance transaction takes place without 3D Secure check.

Step 7. Transaction takes place if authentication is successfully completed.

Step 8. Client is readdressed back to BaaS service.

Step 9. BaaS service, which has the transaction identifier, receives information on transaction results from the Card Processing payment server (whether completed or not).

Step 10. BaaS service sends finish command to the Card Processing payment.

Step 11. BaaS service sends information into Mobile application to inform customer about successful transaction, and sends information into server of Mobile application such as transaction about beginning to execution of product delivery to the customer.

**Results.** Through the execution of the actions described in this article, there is formed a mobile application by which purchases can be made through the mobile application. This solution gives big benefits and a lot of time to programmers. Therefore, programmers write only the front end of the mobile application by using a ready functional.

#### **References:**

1. British Informatics Society Limited, PDF ISBN: 978-1-78017-130-2 <http://www.bcs.org/upload/pdf/cloud-computing.pdf>, 2012.
2. Asokan N., Janson P. A., Steiner M. and Waidner M., The state of the art in electronic payment systems, *IEEE Computer*, pp. 28–35, September 1997.
3. Asokan N., Shoup V. and Waidner M., Optimistic fair exchange of digital signatures, *Proceedings of Eurocrypt '98*, LNCS, Springer-Verlag, 1998.