The Service-Oriented Internet

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Abstract – **High-performance modern Internet allows internal delivery and complement of attractive (mobile) services in the same way and QoS that in the LANs.**

Keywords - **Internet of Services, Service-Oriented Architectures, Cloud Computing.**

I. INTRODUCTION

Nowadays the network technologies obtained large success regarding to data rate (WDM, 10GbE), mobility (HSDPA, LTE), universality and accessibility of computing services [1]. Actually a so called „Internet of Services“ (IoS) became realistic and practical accessible for multiple users and appliances. IoS works on the basis of use of the applications and mobile apps, created with support of so called SOA (Service-Oriented Architectures), see Fig. 1.

High-performance modern Internet allows internal delivery and complement of attractive (mobile) services in the same way and QoS (Quality of Service) that in the LANs. The discussed new information technology for serving of thin clients represented frequently via only low-performance appliances is called „Cloud Computing“ (i.e. computing in the “Clouds of Service-Oriented Internet”) [2, 3].

II. A NEW INFORMATION TECHNOLOGY

Abstract access to the network resources is performed with aid of primitive Web Services (WSDL, UDDI, SOAP, REST) [2], cp. Fig. 1. The general models of Cloud Computing are used:

- Software as a Service (SaaS) – the simplest model with interface supporting to service-oriented Web-applications or mobile apps, which provide access to the Cloud (Frontend).
- Platform as a Service (PaaS) – this model is used for offering to an end-user of an integrated environment for development and/or testing for (Web-) applications and mobile apps (Testbeds).
- Infrastructure as a Service (IaaS) – the mentioned model is applied for offering of virtualized services in internal computing and networking structures (inter alia due to use of the remote servers, SAN/NAS – Storage-Area Networks/ Network Attached Storages, VMs – Virtual Machines operated per SNMP etc.).

The functions of Clouds provide offering of the services for thin client access to the virtualized resources with non-transparent internal structure aimed to performance of certain routines, resources and time-consuming tasks, to consolidation and/or partition of available physical resources, as well as for integration of applications and mobile apps for enterprise informational systems (EAI – Enterprise Application Integration) [3].

Load balancing and function distribution between Cloud Computing and conventional IT is depicted in Fig. 2. The providers of IoS, “Internet of Services“, offer to their end-users multiple attractive services on different hierarchical levels.

Purposed to creation and maintenance of different service-oriented applications and mobile apps the providers of „Internet of Services“ offer frequently corresponding easy-treatment standardized APIs (Application Programming Interfaces) for multiple target platforms. A context between Cloud Components and Cloud Services is represented in Fig. 3. The most famous Cloud Computing providers (IoS providers) world-wide are as follows:

- Amazon EC2
- Sun/ Oracle Cloud
- MS Windows Azure
- OnLive Games etc.

In Ukraine and Russian Federation the Cloud Computing functionality are rather limited per IaaS (i.e. classical DPC, Data Processing Centres). The oldest and largest DPC of Ukraine are ColoCall and Hosting.ua (deployed in 2000). The most famous PDC providers in Russia are: Selectel, Stack Group, ISG, WideXS, Telehouse Caravan, IBS DataFort, KiaeHouse, DataDome, Filanco, DataLine, SVS-Comm, StoreData, KROK, PTKOMM (Rostelecomm).

Frequently the internal structure of the Clouds stays non-transparent for their end-users. The users are enforced to outcrop from the full-trust position to their own Cloud provider or even to multiple Cloud providers. It brings sometimes the complicated SLA-handlings (Service Level Agreements) and responsibility principles of interested sites [4], because of in the general case the Cloud providers have to operate on international level. In fact they underlay to different legislatures in different countries. Moreover they can be furthermore hierarchical organized and be depended from further international providers.

Therefore by careful creation, deployment and maintenance of Cloud Services a lot of problems of multilateral data security remain unfortunately unsettled. This factor limits in certain kind of way the advancement of the discussed new IT and IoS.

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[4] Ukrainian Legal Acts regarding to Data Security

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