Having fun? The vision of similar services is heading towards a “federated” cloud, which allows companies to communicate, share data and services in internal and external clouds alike. The basis is then the “automated” network, which is capable of autonomously transferring applications and IT sources. It will know how to select the most secure way of transferring to the nearest suitable cloud infrastructure, depending on load and need. This “cloud-balancing” greatly improves the energy balance of data centres. Cloud will “distinguish” a PC and intelligent end equipment of next generations. This makes it possible for it “to decide” what types of applications, commands and processes are being carried out in the network or locally on a laptop, smartphone or other device.

Account will be taken of the unique features or needs of the user, as well as specific equipment. Cloud can therefore ensure full optimisation of performance, comfort and productivity of the user in online mode. At the same time, it will adapt to his working style.

The question is - who is able to implement the aforementioned level of services, to link up and ensure their coordinated operation? Another question concerns just how the updating of services, patching, update and upgrade of cloud service platforms will be secured so that the overall integrated service is not disrupted.

At the present time a number of organisations already lease servers from a cloud as a standard IT operation. IaaS is also used for storing and backing up company data, or for occasional increases in the output of the company data centre. This is a typical element for 3D applications, financial statements, payroll sheets, batch printing and so on. For some companies the existence of computer capacity as a service on demand is even an essential requirement for them to have a successful business. For example: the film studio Pixar, which produces animated films. For the production of just one film it needs as many as 40,000 rendering servers, which it does not physically buy, of course, as it only needs them a few times a year.

It is now common practice to use Software as a Service (SaaS). The best known examples of SaaS are Salesforce.com, Google Apps and also Microsoft Office 365. The services of cloud platforms as Platform-as-a-Service (PaaS) have also become essential.

With their help, developers can develop and test out their software with a scalability and usability of thousands and even millions of end users, without senseless investments into hardware.
CHALLENGES OF CLOUD INTEGRATION FOR CUSTOMERS

From the stated examples it is clear that if a company wants to use internal and external cloud services simultaneously, some new, quite significant integration challenges await it. Example: how to integrate the IT environment of a software development company that already programmes and tests its applications in a cloud, concurrently uses also cloud CRM, cloud applications and cloud data storage site. All of this connected up to the traditional local data centre.

The role of a cloud system integrator (C-SI) in this case would be to ensure the secure connection of the local data centre of the company with the provider of a key PaaS and the connection of applications of one provider with the CRM of another. There will also be demand to have payments for all cloud services from different providers combined into a single monthly invoice. Documents, files and data from all applications, services and platforms have to be integrated and directed to a secured cloud storage site.

WHAT TO DO WITH INHERITED INTEGRATION SYSTEMS?

The majority of similar companies are already using some original integration platform, which poses one of the most serious challenges for transition to cloud. Traditional integration or middleware products that the IT of these companies operate were established before the arrival of cloud. Typically, these comprise integration server products or dedicated equipment with connectors, and/or adapters mutually connecting applications. Even though a number of them have already been innovated, with added new connectors – such as for Salesforce.com, for an organisation they are one of the main challenges for switching to cloud. These traditional integration products and processes do not reflect sufficiently even the strategic focus, or the concerns of IT that the path of a company to cloud raises.

These are primarily:
- automatic upgrades of traditional integration platforms,
- managing data subject to integration, which are relocated among various clouds and local applications,
- centralised development and operation for ensuring compliance with the external environment,
- scalable and manageable integration infrastructure, which can deal with the continually rising number of cloud services and clouds used by the organisation.

Furthermore, cloud infrastructure supports and even directly forces a change of company processes, which have to accept the provision of standard IT commoditiest to date (LAN, desktops, applications, servers, storage, databases etc., ...) in the form of services over the internet, as well as unified payment models of the type pay-as-you-go/pay-per-use.

UNPREPARED FOR CLOUD

An experienced C-SI will help the customer avoid frequent mistakes that are made already in the preparation of the project for migrating IT systems to a private cloud. Namely, that is underestimating your own readiness for cloud and relying on your own resources without calling on a C-SI. His task, among other things, is to explain to the owner of the migration project that the only correct path is the non-technocratic approach to integration. The integration project will end successfully provided all involved key actors are aware of the need for its detailed and timely planning and management. The integration project should help the company let go of existing company processes and activate new ones, necessary for the cloud. The proposal of integration in such a context is a real benefit, the value of integration clear, and the comprehensiveness of the project evident and rational from the very start.

CHALLENGES TO CLOUD INTEGRATORS

We feel that the arrival of cloud will directly cause a drop in the importance of the role of traditional system integrators (SI), who operate in classic areas of virtualisation and outsourcing of IT, whether now only partially or completely. Conversely, companies will be able to make full use of the advantages of cloud computing only with the consulting and implementation services of the newly forming category of SI – cloud system integrators (C-SI). We can be sure that the majority of current large IT services suppliers that follow trends and want to remain key players also in the “cloud chasing” will belong to the new category of C-SI.
TRANSFORMATION OF CURRENT SI

Nowadays, we can say without doubt that cloud computing has become an irresistible lure for potential customers thanks to the price affordability and the scalability of IT services. Only an experienced C-SI with a clear vision and economically substantiated strategy, however, is able to ensure from the perspective of architecture that the cloud environment will produce clear commercial advantages for the customer without compromises in security. Till now SI have focused chiefly on planning, optimisation, integration and administration of the IT environment. Over time they even partly took over responsibility for bridging the gaps between the needs of the customer IT and infrastructure that was available to it. At the present time, in "classic" IT the bricks are not on top of each other. However, the good news for traditional SI is the existence of public domain cloud computing, which allows them to expand the activities carried out to date. The arrival of cloud solution providers will also produce a change, as they become another link in the chain of the typical business model of system integration. What should SI, transforming into CSI, be contemplating most? It should be the multi-tenancy nature of cloud systems, especially on the level of Saas. This is because in reality integration of the environment of a single tenant to the cloud only shifts traditional IT problems to a new data centre. Users can, however, only freely draw on the benefits of collective communal intelligence once the architecture of the integrated, multi-tenant solution is created. In such a case all those involved use a single, highly scalable and secure instance of platform, which provides the added advantage of very swift innovation and improvement of the product, which is only possible in truly native SaaS solutions.

In cloud, independent suppliers of software are able to centrally develop, implement and manage integration for all their customers at once, from one central platform. Using traditional remote reports of integration configurations at individual end points running at many localities, this is not possible.

MIGRATION AND INTEGRATION TO A PRIVATE CLOUD

C-SI must firstly help create the organisation of a highly secure environment for processing critical tasks and storing highly sensitive information. Failure in the area of security is inadmissible, because of the risk of loss of information and competitive advantages, which could have catastrophic consequences. Security in a private cloud is critical also from the perspective of the development, enhancement and testing of vital systems, not to mention the research and development base.

MIGRATION AND INTEGRATION TO A PUBLIC CLOUD

A public cloud represents another integration challenge. This type of cloud is offered by various providers (2), the best known of which are Amazon, Google, Facebook, RackSpace, CenturyLink/Savvis, Salesforce.com, Verizone/Terremark, Joyent, Bluelock, but also by providers of virtualisation or cloud platforms and solutions, such as: WMware (Cloud Foundry, vCloud Director), Microsoft (Azure) and Citrix. The last mentioned of these traditional suppliers of solutions for desktop virtualisation, applications and application networking, not only acclaims cloud by its strategy and vision, but it is also one of the most important providers of platforms for setting it up (CloudPlatform, CloudPortal, NetScaler and XenServer).

The portfolio is complemented by cloud services for storage focused on corporate clients (ShareFile) and collaboration services for meetings, webinars and training (GoToMeeting, GoToWebinar, GoToTraining). Other services provided from the cloud include those for servicedesk / helpdesk, or infrastructure management (GoToAssist a GoToManage).

The most recent addition Podio represents cloud project management linked to social networks. Where a data centre or private cloud with public cloud services has to be integrated, the C-SI may apply solutions also from Citrix (CloudBridge). This particular solution is necessary so that a company that is building up or consuming cloud services knows how to get the most out of them and as quickly as possible. The C-SI must know how to configure public clouds and the connection to them in a way that allows their operation as a native extension of the internal computer and storage platforms. What’s more, a public cloud is an open solution and so the organisation must be capable of moving to a public cloud without fear of loss, leak or theft of important information or data.

Another task of the C-SI is to ensure control of the shared environment, by which we understand the regular launch of tasks and applications that run in the background of the company: reports of various operations, accounting, payroll processing, extensive printing tasks, billing, etc. Similar activities should more or less be secured away from the locality of the outsourcer, where sources devoted to the business should run.
CLOUD INTEGRATION PATHS
Depending on the nature of the ownership relationship of the organisation to the cloud, realistically there are 3 integration paths, corresponding also to the typical model of behaviour in IT at present:

- Integration of the cloud to the company environment. The outcome could be the implementation of a private cloud, or connection of traditional company infrastructure to a public cloud.
- Integration of cloud with cloud (hybrid cloud). A typical example is the connection of a private cloud to a public cloud.
- Brokering cloud services, which represents a very complex integration path spanning numerous local and global systems in the cloud.

In general, integration paths are becoming more complicated under the influence of increasingly intensive penetration of cloud to all areas of IT and everyday life. As an example of this penetration we can mention Apple with its AppStore, for instance, or Google with the internet shop Play.

CLOUD INTEGRATION TOOLS
Even though system integration is the “uglier” side of cloud computing, integration problems can be resolved by correct and above all timely planning and by the use of suitable technologies and integration tools. Integration tools are a chapter all of their own, and one which potential and existing C-SI should devote a lot of attention. The correct selection and use of an integration tool essentially eases the transition to cloud and reduces costs. We can distinguish three basic types of integration tools for cloud:

- Integration applications that run on physical or virtual servers at the customer, in its existing infrastructure.
- Integration equipment (appliances), with one or several integration functionalities. Appliances are purposeful preconfigured servers for specific cases, like the connection of the company with a specific public cloud.
- A typical example of this is IBM WebSphere Cast Iron.
- Integration tools provided from cloud directly by its operator, e.g.: Force.com(3), or Dell Boomi AtomSphere® (4).

It is only a matter of time before integration services for cloud move directly and fully to cloud. Companies and C-SI will be able to use the integration environment as a native service of the cloud in the form of a unified integration platform.

INNOVATIVE GUIDANCE OF CLOUD INTEGRATION: BROKERS AND IPAAS
CLOUD SERVICES BROKERS – A NEW SPECIES
Just as companies will gradually migrate their IT from traditional solutions to cloud ones, the number of services provided from cloud will also rise. CIO are reacting by an effort to reduce the demands and costs of integrating cloud services. That is why they are starting to look for suppliers that are able to integrate various cloud services from various cloud providers. This was created gradually under market pressure, and another new level of SI - Cloud Services Brokers (CSB) is forming.

In many cases, we could paraphrase the mission of CSB by the idea of “freeing companies from the fossilised technologies of the past and enabling full and unlimited use of the advantages of new paths in cloud, in a way that invokes the interest of customers and employees alike”.

It is essential to mention that the creation of this category of integrators is subject to a new business model, which does not primarily have to be based on technologies. A CSB typically works in the background of the activities of the consumer of cloud services, whereby it mediates and adds value to the consumed services. It is no surprise that in addition to stated leaders we count among CSB the likes of: Appirio, Liaison (originally HubSpan), Dell/Boomi, IBM/ WebSphere Cast Iron, SnapLogic and Zuora, and Facebook or Amazon.
IPAAS: INTEGRATION AS A SERVICE FROM CLOUD

The integration platform as a service, or “iPaaS”, invokes many positive expectations, even though it is still in the early stage of development. It is recommended to devote increased attention to this also at present, though, especially in the development of IT strategy directed towards cloud.

According to the definition (5), “Integration Platform-as-a-Service” is a suite of cloud services that help resolve a broad spectrum of integration scenarios for cloud, including integration with B2B systems, with local solutions, supervision, control and including also methodical management and control. These scenarios may contain any combination of local and remote applications, services of the type cloud and SOA, processes and data within and outside of the organisation.

In this respect, iPaaS is a complementary platform for aPaaS (application PaaS).

The projection is that in 2015 iPaaS will be a market mostly for very advanced, large and medium-sized end customers, and a supplementary business opportunity for C-Si in the areas of integrating e-commerce B2B, integrating cloud services, or SOA.

On the relatively new and strongly fragmented market of iPaaS we can see a huge number of start-up companies. They are coming with interesting but as yet unattested technologies that invoke worries about security, privacy and quality of SLA. Floating business models and pricing do not guarantee the anticipated ROI of adoption of iPaaS, because the calculations should include also the high level of inertness of traditional middleware applications and integration infrastructure. On the other hand, waiting too long for the market to mature could result in negative consequences, because the competition is already using iPaaS to cut costs, increase effectiveness and build up additional competitive advantages.

IN CONCLUSION

We would not like to preach about what is the best and right approach to integrating cloud, in cloud and with cloud. One thing is for sure, though, it makes good sense to devote extensive space to understanding the integration needs of the customer sufficiently in advance before migration. The creation of an integration plan in the context of main business processes, together with the most suitable technology, should be a guarantee of successful migration to cloud, or connection with cloud. For us the following areas of integration are critical, although we do not recommend focusing solely on them:

1. Security: how and where will sensitive information be stored, encrypted and managed, whether they are on a local storage point, pass over the internet or are in movement in the cloud.
2. Firewall and mediation of communication: how to prepare communication for the external world and vice versa – how to receive data that are not intended for the ports http (80) or https (443)?
3. Output: at what speed can we transfer data to the cloud and from the cloud so that we do not influence the productivity of end users? What mechanisms will be used for the transformation of data and routing while adhering to permitted delays?
4. Intelligence: how to distinguish semantically the individual services and applications from cloud? Can the proposed integration platform differentiate end equipment and users? Does it use the properties included in the network, which “know” about the transferred content?
5. Updating and maintenance: the question is, how will new cloud and/or company interfaces be supported, as these will be developed over time
6. Supervision and control: the correct method of monitoring all necessary points of integration and logging data in motion

References:
(3) http://www.salesforce.com/platform/cloud-infrastructure/integration.jsp; (4) http://www.boomi.com/;
(5) Gartner RAS Core Research Note G00210747, 7 March 2011

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You can find out more about how to ensure effective support of processes for the management of IT services in the product documentation and on the website www.posam.sk. Feel free to contact also the Sales Division of our company.

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