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Project management solution in the cloud

From Mario Angelsberger and Oliver Giger



Cloud computing is the talk of the town and meanwhile becomes understood as solution for many problems and in response to the search for new approaches in IT.

But, what does one understand by cloud and cloud computing actually? This is the definition given by Wikipedia:

«**Cloud computing** is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation»

We want to follow the question, how project management solutions can be in the Cloud and how users can benefit of these solutions.

But first a short introduction, what can be summarized under «cloud computing». The National Institute for Standards and Technology (NIST) has defined four cloud models, namely the «Public Cloud», the «Private Cloud», the «Hybrid Cloud» and the «Community Cloud». Each of these cloud models are backed by service models. They are known as **IaaS** - Infrastructure as a Service, **PaaS** - Platform as a Service und **SaaS** - Software as a Service and well placed in the industry.

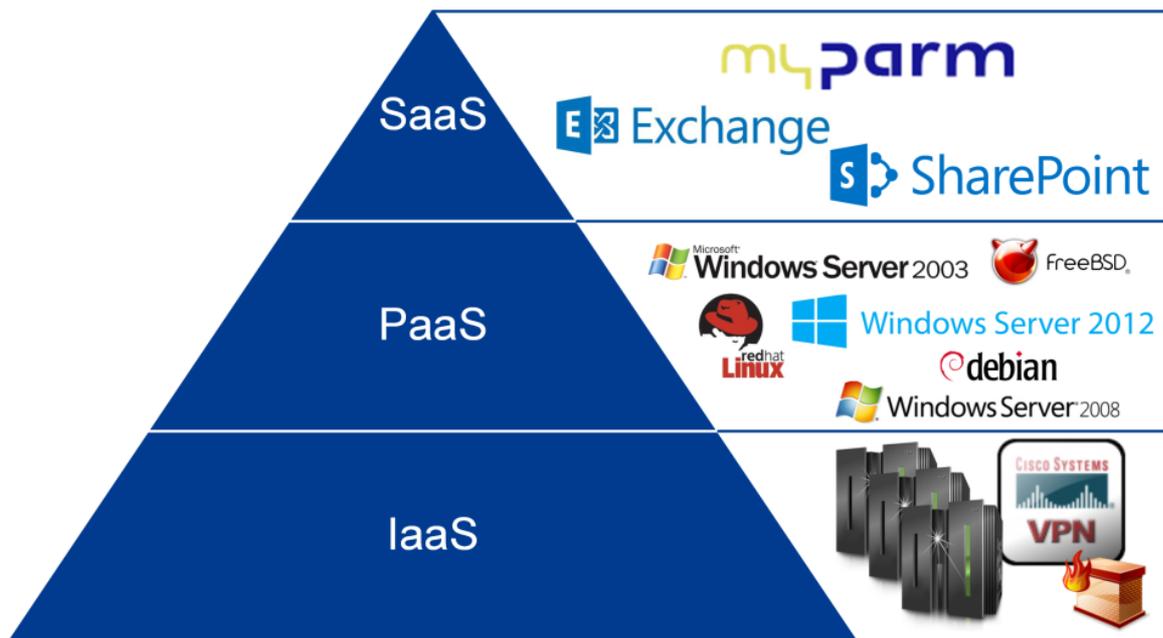
Under cloud or cloud computing is understood that part of the IT infrastructure or the entire IT environment, such as a corporate data centre, data storage, or application software from the user is no longer operated or provided to him on site, but will be rented as a service from one or more suppliers. The applications and data are no longer located and stored on the local machine or across a data centre, but they are made available in the cloud.

Public Cloud offers a broad public access to IT infrastructure via the Internet where service providers allow their customers to rent IT infrastructure based on a pay-as-you-go model. This means, that customer does not need to invest in computer and data centre infrastructure. But this also adds some risk, since users of public clouds have no possibility to determine who their «neighbours», i.e. the co-users of the common infrastructure in the cloud are.

Private Cloud provides access to IT infrastructures within the organization (agency, company, start-up, club). The cloud infrastructure is exclusively assigned to a user or to an organization. This applies not only to computer and data storage, but also network components such as switches or firewalls.

Hybrid Cloud offers combined access to IT infrastructure in the areas of public clouds and private clouds to meet the needs of their users.

Community Cloud provides access to IT infrastructure like the public cloud - but for a small and limited group of users, which are mostly locally distributed, and are sharing the cost (e.g., several municipal governments, universities, businesses / companies with similar interests, research communities).



The Cloud-Computing-Architecture specified by NIST knows three models, namely Infrastructure (IaaS), Platform- (PaaS) and Application models (SaaS). Each of the layers here represents a degree of abstraction, which also classifies the different types of «Clouds».

Infrastruktur (IaaS)

The infrastructure or «Cloud Foundation» is representing the lowest layer in «cloud computing». The advantage to traditional data centres is the scalability of IaaS. Depending on the requirements, the computing instances can be extended or reduced on demand. The user has full access to the IaaS instances. He can be delegated different rights depending on the roles/responsibilities policies which are required.

Platform (PaaS)

The application is the focus. The developer creates and loads it into the cloud, which takes over the distribution to the actual processing units. Unlike IaaS the user has no direct access to the computing entities. He also does not run or has access to any virtual server.

Software (SaaS)

The application layer (SaaS) represents the most abstract view of all of the cloud services. The user uses applications (eg myPARM) that are being loaded and maintained at the cloud and are provided as a service being accessible through the internet. Services like scaling the application, Data Management, Data Backup etc. are fully provided by the SaaS Provider. The user does not bring/load his application into the cloud.

In addition CipherSpace / parm ltd. offer simplest User Licensing, seamless distribution of updates, feature enhancements and security patches and secure backup of the virtual server and the application data.

Access to the cloud systems take place via a network such as the Internet and require a high-performance and reliable connection. Companies operate so-called «private clouds», accessing them through a corporate intranet. Access to the company's proprietary cloud can also be done via the Internet. CipherSpace offers its Virtual Private Data Centre (PVDC), which guarantees safety and full data privacy.

Let's focus on some of the **advantages** of cloud computing. Cloud computing provides cost advantages over conventional systems. This is true, if the cloud service is used only occasionally since payment depends on the duration for of the use of the service. This leads to reduce costs by eliminating expensive hardware and software (server and application programs) as well as in administration. The user benefits in the fields of updating of programs, since they happen automatic and cost neutral. No extensive backups, no consequential damages due to hardware failure – these services are fully covered by the cloud provider. Also, theoretically an infinitely scalable storage and computing capacity with short-term adaptation of the used capacity to the actual demand is at the user's discretion. Finally, worldwide access to programs and data is always available.

Like everything, Cloud Computing has also a **flip side**. Data security is problematic in cloud computing. Data is accessed over the internet and can easily be monitored or even spoofed. Data encryption which is at high performance and at the same time one hundred percent safe, is still not available. Also, own data can be theoretically read and manipulated by the service provider and its partners. Finally, since all communication uses the Internet, ruled interception and blocking attacks cannot be excluded. There is also a dependence on the IT Service Provider. Since data, programs, applications, or data bases are all located at the remote cloud data centre, an uninterruptable fast internet connection is essential. Data e.g. stored in clouds in the U.S. are in access through the local offices, such as FBI, CIA and finally public cloud providers like Google, Amazon, iCloud will distribute the data within their infrastructure, without the user having the possibility to control and influence these storage locations.

As the **answer** to above problems CipherSpace, together with parm ltd. have defined the Virtual Private Data Centre (**VPDC**) and established this as their cloud service. The VPDC enables the customer to fully use and benefit of the "cloud technologies" but within a «gated community» with access strictly restricted to a single client. Auditable security along with high availability, reliability and resilience giving dynamic response to resource requirements are only some of the advantages a PVDC user gains. The ability for the customer to retain full control over the PVDC or to take advantage of a fully-managed service make the PVDC a very interesting setup for his cloud computing plans.

Now, the use of cloud computing in the project business can be a given. This, because it enables geographical flexibility, project staff can access project data from anywhere (even CAD). In the cloud, available cloud Parm applications can be used on various devices (thanks to Virtual Desktop Interface - VDI, applications can even be used on smartphones). This gives easy options for collaboration, since data and algorithms can be shared. Thus, the company truly can concentrate its project business, because all information technology needs are covered extensively by the PVDC CipherSpace / parm ltd.. This leads to a maximum system availability.

Now, where will the cloud go **tomorrow**? Answering this question is like reading coffee grounds. But one is for sure. The trend towards cloud solutions is main stream. More and more vendors are offering cloud solutions for businesses and consumers that also satisfy the regulatory environment in Europe. With the development rate of cloud services, complex infrastructure such as networked cities can be made functional. Applications are designed specifically for cloud computing and can therefore benefit more from the almost unlimited computing power and storage capacity is made available. PVDCs are getting more and more weight, since data security and data privacy concerns are gaining importance. Switzerland, due to their restrictive Data Privacy Laws, is increasingly becoming a preferred location for international cloud computing data centres.

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