

INTEGRATION OF CLOUD SERVICES CRITERIA IN THE SELECTION PROCESS OF IT SOLUTIONS IN TECHNICAL WHOLESALE

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Abstract: More and more companies in technical wholesale rely on IT services from the cloud. This development must also be reflected in the basic selection procedures for IT products and services. In this article, this is shown by means of decision-making processes and criteria for evaluating offers for operational application systems as well as for IT platforms and providers.

Key words: Selection processes, System evaluation, IT solutions, SaaS, PaaS

1. INTRODUCTION

Cloud computing plays an increasingly important role in enterprise IT. Typical reasons for this are an increased level of automation for the management of IT infrastructures in the industry. Due to the growing importance of cloud offerings, the question arises as to whether and how existing selection processes for IT solutions must be adapted.

The present article will explore exploratory approaches to the selection of IT systems and infrastructures that can take account of new requirements for cloud services and how these can be integrated into the standard procedures used. For this purpose, the first experiences from the industry of technical wholesale are discussed by means of the assessment of software as a service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). The selected experiences, in spite of the non-reliable scientific will be quantified in subsequent ones. In spite of the scientifically not reliably secured experiences, these appear interesting enough to be

summarized here. The experience gained provides valuable starting points for further analysis of the industry and the improvement of the selection procedures with the consideration of cloud services.

Section 2 gives a general overview of the experiences in the fallow. Fundamental considerations that can lead to the use of SaaS are presented in Section 3. Section 4 presents modified criteria for evaluating operational applications. Section 5 extends this discussion for IT platforms. Section 6 summarizes the experience gained.

2. CHANGES IN SYSTEM EVALUATION AND SELECTION

Many companies of the technical wholesale follow typical standard procedures when selecting suitable IT solutions. The matching of functional and non-functional requirements for IT infrastructure components or information systems usually runs according to similar patterns. After the phase of project preparation and the actual analysis, a target concept is drawn up Requirements of enterprises. After the system evaluation, the best provider is selected in several steps: market screening and pre-selection on the basis of the requirements, system tests including detailed analysis, subsequently negotiations and conclusion. Subsequent considerations focus on the sequence of system evaluation and selection. The results of the preceding phases project preparation, actual analysis and target concept are accepted as input for the phase of the system evaluation. The requirements thus identified are then used as criteria for assessing new systems in the system evaluation [1].

Basic evaluation of cloud solutions	market analysis	preselection	system test	rating	selection
	New cloud-specific criteria	New cloud-specific criteria	New cloud-specific criteria	New cloud-specific criteria	New cloud-specific criteria
Cloud-specific phase of system evaluation	Previous phases of system evaluation				

Fig. 1. Cloud-specific extension of the procedure in a system evaluation

As shown in the following sections, cloud offerings (see, for example, [2]) change the existing practice of system evaluation. Companies usually clarify whether the cloud approach such as SaaS, PaaS or IaaS is suitable for the planned solution. Accordingly, an additional phase for the fundamental assessment of a possible use of cloud computing is presented before the previous procedure. In addition, in the

subsequent standard phases of the selection process, cloud-specific criteria are also used for assessment. Figure 1 illustrates these changes, which are detailed in the following sections.

3. BASIC REVIEWS OF SAAS OFFERS

It is worth noting that only a few companies evaluate cloud offerings and classic on-premise solutions on an equal footing. Rather, it is usually decided beforehand whether cloud solutions should be considered at all. Corresponding criteria are described here for the SaaS area.

Fundamental decisions for or against Cloud are often based on external and internal compliance and security requirements - e.g. on national laws that limit the storage of sensitive data in the cloud. Experience from the company's shows that a general rejection of cloud solutions is often questioned differently based on such requirements. On closer examination, hybrid cloud approaches (see, for example, [2]) are often also possible and useful. If, for example, the storage of invoice data in the cloud is not allowed, companies can store the data within the enterprise and, in the processes of a SaaS solution for CRM. Non-functional requirements are also included as criteria, which are usually not a problem for on-premise solutions. In this context, it is intended to refer to the requirement of individual national directives that financial data must be auditable on the physical level. For SaaS solutions, this often entails a significant hurdle because the large vendors normally do not have access to their data centers.

In addition, completely new aspects are important in the basic decision for or against the cloud. One example of this is the risk of loss of image, as a result of the familiarity with foreign access. But also questions about how to integrate cloud applications into the existing IT landscape is not always easy to solve. It often seems more sensible to clarify the degree of integration at the beginning of the selection process. Because the more the targeted cloud solution is to be connected to different systems via interfaces, the higher is generally the hurdle for a SaaS offer. Finally, the architect's perspective also plays a role that cloud solutions can contribute to higher standardization. For this reason, some companies are deliberately using cloud solutions as a means to implement strategic consolidation measures more quickly and with greater acceptance.

4. NEW AND CHANGED ASSESSMENT CRITERIA

When a SaaS solution is in the main, companies are looking at vendors in the next phase on the basis of the usual criteria: compliance with business requirements,

functional bandwidth, usability, consensus with architecture principles, and more. However, some of these points are new for cloud applications questions:

- Is a fast implementation by SaaS an advantage for the companies? The short time to rollout is often seen as an argument for cloud solutions.
- Do we get a complete solution? The companies consider it important to evaluate a holistic solution.
- How innovative is the provider? For end users, SaaS solutions are often attractive because they have high usability and provide innovative functionalities quickly.
- How can internal stakeholders be convinced of the solution? In the case of several companies, the user ability that is attractive to the user has been rated higher.
- Do we need the adjustments and extensions offered? When companies compare SaaS offerings with functional requirements, it is often the case that they are in contradiction to standardization efforts or a high degree of flexibility, which is contrary to the actual goal of the SaaS solution.

In practice, it is often the case that companies are only considering the respective market leader for a SaaS product. This was based on the assumption that other vendors will hardly meet important security or compliance requirements if these are not met by the leading vendors. In addition, companies are usually not willing to become pilot customers of smaller SaaS service providers, in particular because the long-term marketability of these providers has not yet been proven.

5. DECISION-MAKING CRITERIA FOR PAAS

If companies want to use PaaS as an IT platform, there is a fundamental difference to the selection of SaaS. In a first phase of the analysis (see Figure 1), the companies basically decide whether to use PaaS. The subsequent steps in the selection process then often focus on evaluating different PaaS offers.

The pursued goals for the introduction of a PaaS can be varied. For example, their use promises to help build a flexibly scalable platform that can better support new IT services and significantly accelerate their market launch. In particular, modern DevOps principles such as continuous delivery and integration can be optimally implemented. Important considerations and the selection criteria derived from this, when the companies initially think about using PaaS, are as follows:

- How to increase the degree of automation in software development, for example, dynamically scalable environments in real-time? With PaaS, application environments in the form of preconfigured application containers, such as Java EE application servers, can be automatically deployed together with the operating system environment.

- How can system integration be improved? The communication between applications is carried out in a PaaS via middleware components - as a rule, messaging systems (see Message Oriented Middleware in [1]). Compared to installations in often different infrastructural environments, environment-specific configurations do not exist within one PaaS. Modular, loosely coupled services are created that can consume each other. To the outside, these services can be integrated using the principles of a Service-Oriented Architecture to maintain loose coupling.
- How can data retention be optimized through cloud approaches? This requires a careful evaluation: using data services within a virtual container, database states can be automatically scaled horizontally. However, this leads to a paradigm shift in the case of classical database-centric application architectures in which database conditions are traditionally held centrally in relational database management systems (see Stateless Component and Stateful Component in [1]).

If PaaS presents itself as a promising possibility, initial experience in the selection by company's shows that a fundamental decision for or against the introduction of corresponding cloud services often depends on organizational circumstances. Stronger than the selection of a platform technology, adjustments to the way of working and a cross-cutting cooperation in the introduction of a PaaS are the focus of the discussion. Differentiating factors are less the product features of the platform technology and the supplied default-frameworks, but rather the existing framework conditions within one's own organization. In this context, the following questions arise:

- Are internal structures and interfaces to IT infrastructure components sufficient for complete automation? The implementation of a PaaS requires the complete automation of the deployment mechanisms of the complete platform. This also applies in particular to integration with existing billing and management software.
- Are existing virtualization approaches a sufficient foundation for further dynamization? As a rule, the path to dynamization leads to the successive virtualization of the infrastructure, which has mostly developed historically.
- Are there appropriate security standards that can be applied to dynamically scalable infrastructures? Safety standards are still often geared to static infrastructure. There are also few experiences with virtual decoupling mechanisms of a PaaS.
- The issue of whether or not the included application frameworks play a role is often classified as a downstream issue.

If a first decision has been made for the introduction of a PaaS, detailed questions will be taken into account in subsequent phases of the selection process. Examples for this are:

- What lifecycle services are available? In order to increase the degree of industrialization and automation in a cloud stack, the hardware and software components required for each other are needed. This also applies in particular to lifecycle aspects.
- How can optimal integration of hardware and software components be ensured? Often it is not enough to build on existing virtualization approaches. On the contrary, there is the danger that additional PaaS components tend to increase the complexity of the overall landscape. It is also being separately virtualized in many companies in the development and production area.
- What are the advantages of open source platforms? Open source solutions are usually based on open standards. However, it is to be assumed that modifications or additions are necessary. In particular, interfaces for own authentication mechanisms and self-service procedures have to be implemented.
- What distinguishes commercial products? In particular, the interoperability of existing APIs is one of the essential factors.

Companies are increasingly finding that PaaS is not an issue for a simple, comparative platform selection. In order to reduce complexity, the first step is to clarify the possibilities and goals of the existing organization.

4. CONCLUSION

Cloud services change the selection process for IT solutions. This is the conclusion of the images momentum in the industry of technical wholesale. It turns out that the typical patterns for the evaluation of IT applications and platforms is preceded by a phase in which a man is fundamentally occupied whether or not cloud services are considered. Subsequent decision-making steps then include partly modified evaluation criteria that address the various aspects of cloud offerings. A further analysis of the hardening and detailing of the first observations made here appears to be useful. Both for application companies and IT service providers is an understanding of the constantly changing process processes and criteria of IT solutions.

REFERENCES

- [1] Humble, J; Farley, D. (2011). *Continuous Delivery: reliable software releases through build, test, and deployment automation*, Addison-Wesley, Boston, pp. 72-86.
- [2] Fehling, C. et al. (2014). *Cloud Computing Patterns: Fundamentals to Design, Build and Manage Cloud Applications*, Springer, Wien, pp. 81-83.