Managing the cloud:
The role of University's central IT

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1. SUMMARY

Supporting research activities at Higher education facilities comes along with many challenges, also for the IT infrastructure. From high flexibility and scalability on the one hand to reliability and integration in central university processes like identity and access management, research data management or accounting and billing on the other side, the range is open wide.

Research departments require highly flexible IT services. Cloud infrastructure services are one way to meet the institutions need perfectly. Simultaneously fulfilling the university's requirements and regulations seems even more challenging.

By introducing cloud usage the face of the central IT, providing IT infrastructure for the university ever since, changes. Using this fact as a chance, one can think of ways to provide cloud services through central IT. This can be an instrument for connecting the challenge of managing the cloud for the university while transforming the tasks of a central IT.

Speaking in general terms this means that the central IT can be used as partner for the university's institutions which offers consulting, IT services and support, regardless of the fact of who provides the services. By this means, on-premise services can reasonably be extended by cloud services.

2. PROBLEM STATEMENT

As one of the RWTH Aachen University's central suppliers of IT services[1], the IT Center offers central IT services such as network and server infrastructure and supports all major processes at the university. Up to now, this certainly means locally managed on-premise services or services run by a German partner university. Of course, this brings along limitations in staff as well as variety of services, flexibility, provisioning speed, and scalability.

Using cloud services to provide infrastructure for teaching and research activities covers these limitations. From high flexibility to scalability and pay-as-you-go usage there are many reasons why a university should take advantage of the possibilities offered here.

From the organizational point of view there is of course more to consider than these obvious facts. In detail, the integration of services in the central processes of the university means:

- Consulting the data security officer: which data can be stored in the cloud, according to confidentiality requirements?
- Consulting the personnel board: are the staff's rights affected by using cloud services?
- Purchasing, accounting and billing: as each institutions has its own budget and third party funds, the costs have to be accounted not for the whole university, but for each institution. Until now, all hard- and software for on-premise services is purchased and/or licensed so that there occur no usage-dependent costs. In this respect, the cloud business model is sort of a paradigm shift.

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[1] Besides the University's Library and the unit that runs the administrative systems

- Identity and Access management: One of the central IT services offered by the IT Center is the identity and access management. This is used to support all major processes within the university. Thus using this to authenticate and authorize users within the cloud service brings along many advantages.

Some of these considerations have to be made once for every cloud provider; others are depending on the individual use case that should be supported by cloud services and thus permanent tasks for the central IT.

3. POSSIBLE SOLUTION

As pointed out, the area of conflict stems from the flexibility offered by public cloud services which is strongly demanded by the research departments on the one side and the adherence to legal and organizational regulations. The challenge for the central IT is now to integrate the services different cloud provider offer into the services offering and thus the university processes. As always, one has to find the balance between guiding the user through a process and offering secure guidelines without limiting the user in its possibilities.

The first component is a process that can be used permanently to manage the security, purchase and payments aspects of cloud through central IT. The main aspects for this process concerns the following facts:

- consultation is offered by the IT Center to institutions that intend to use the cloud infrastructure, but not obligatory. Here the demand of each institution as well as the optimal IT infrastructure to meet the needs can be discussed
- Central IT also assists in involving the data security offer and/or the personnel board. By centralizing this step and involving the central IT, for similar use cases blueprints can be established.
- The IT center is also responsible for installing and configuration of a new environment for an institution. This is the only bottle neck in matters of speed. As this step can be automated, we can neglect this fact.

By using this process, it can be assured that the guidelines such as GDPR and the university processes are followed. Through the centralization of knowledge, the cloud usage can be optimized and therefore the budget usage improved.

The second component is setting up an AAI-infrastructure for cloud providers that is tied to the University's Identity management. This allows consistent identities across multiple services (cloud and on-premise) and – most important – connects these identities to the well-established lifecycle processes. This is inevitable to ensure access rights and authorship and therefor is a key ingredient of compliant cloud usage.

4. IMPLEMENTATION

The Implementation of this process is still going on at RWTH Aachen University. We started with picking one big cloud provider to start with. Hereby the organizational structure is build up and at the same time, the central infrastructure (e.g. network and automation in configuration processes) can be prepared.

The processes is defined, the organizational structure is build up and we are now at the stage of preparing/testing central infrastructure, identity and access management and communicate our solution to the university. There are already pilot user testing the current configuration.

5. CONCLUSION

Offering cloud service through central IT connects the benefits of using the cloud with the regularities IT service at a university has to fulfill.

Cloud consulting through central IT is a chance to centralize knowledge and optimize the use for the university. In this way, questions like this can be answered: Which cloud fits my scenario? Is it better to stay on premise? What does it cost and how can I optimize this?

Making it an offer, not an obligation, increases the acceptance. The demand is already there.

6. AUTHORS' BIOGRAPHIES

Denise Dittrich, M.Sc is working at the RWTH Aachen University's IT Center since 2005. She received her Master Degree in Artificial Intelligence from Maastricht University in 2009. From 2010-2012 she was deputy head of the IT-ServiceDesk, thereafter responsible for IT Process support and Identity and Role Management. Since 2016, she is deputy head of the department for Systems&Operation with her focus on providing large-scale central services like Groupware, Identity Management and Collaboration platforms.

Dr. Thomas Eifert, received his doctoral degree in solid state chemistry. Since 2013 he holds the role of the CTO and is thus responsible for the technological strategy of the IT Center. His particular interests are the mutual dependencies of researchers' requirements and appropriate technical solutions.