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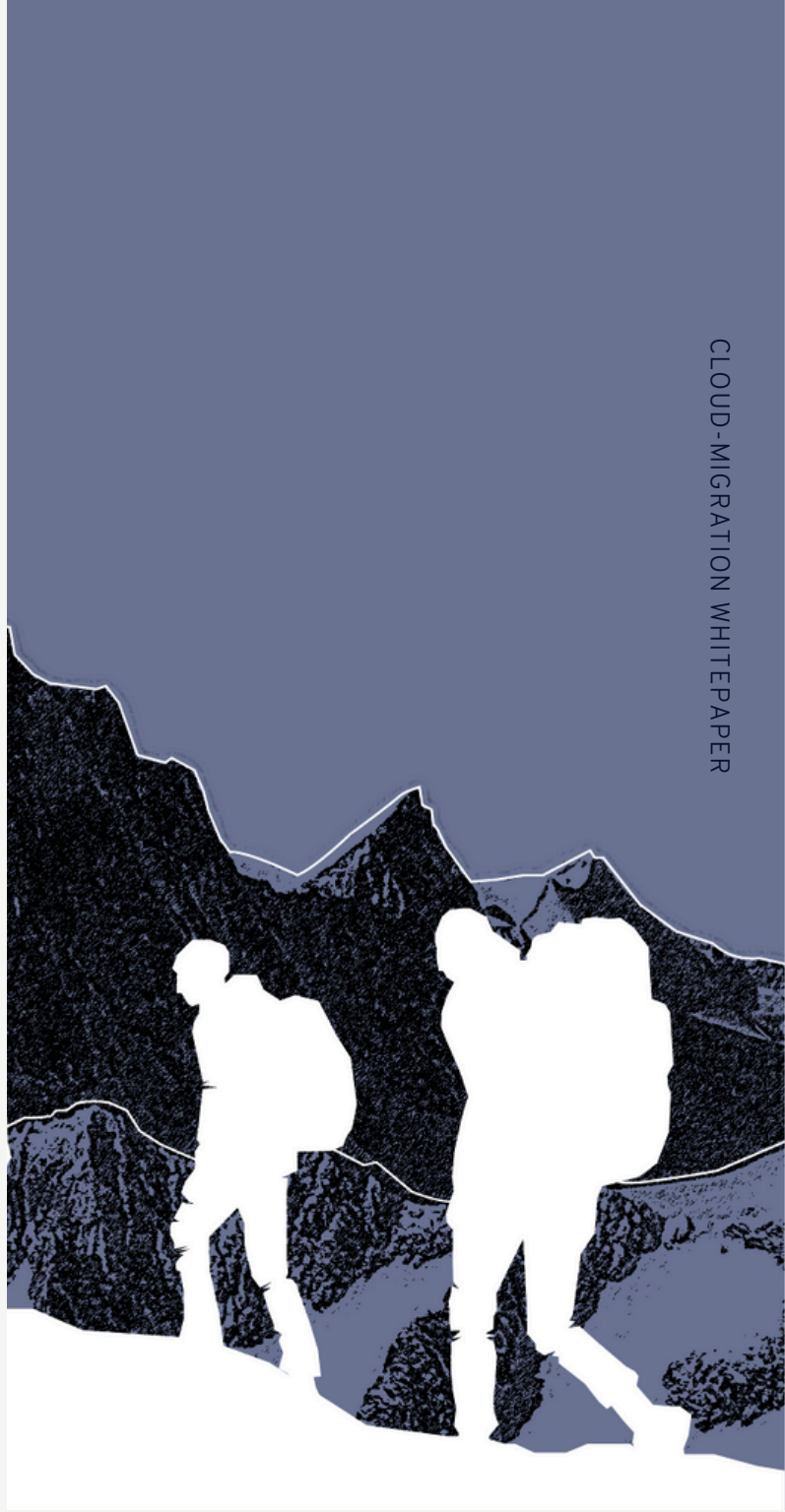
Cloud migration: how to achieve a smooth transition

Change – for better or for worse – wouldn't be change if you didn't have to overcome a few hurdles to get to the other side. Take an interest in how companies are handling the move to the cloud and what difficulties may occurs during the transition. This white paper provides some helpful advices, from choosing the provider that's best for your business to the key steps you should take to ensure a smooth migration.



Is your company already in the cloud?

Businesses of all sizes are looking to move to the cloud to increase agility and reduce the burden of extensive IT resources. From more cost-efficient IT to simplified management, freeing your operations from static infrastructure offers numerous benefits.

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What are the advantages of migrating to the cloud?

Control and Security – Moving sensitive data to an external environment can involve risks and requires numerous approvals. Security is one of the biggest challenges to overcome, although the public cloud offers more security than traditional computing platforms. When managed appropriately, off-premises cloud environments can provide better security and data protection than on-premises environments.

Costs – In the long term, huge cost savings can be achieved by migrating to the cloud. However, many companies fail to monitor their cloud usage and so do monitoring costs. Fixed vs. variable costs can make things even more complicated, but the best service providers are usually those that offer flexible management of both cost items.

Visibility Assessment and measurement tools are central to cloud migration: many companies struggle to keep track of their cloud footprint, especially if the transition takes place over a long period of time. Make sure your data remains visible and traceable.

Performance – Choosing the right CSP will help you overcome the “performance hurdle.” You must have the appropriate management tools in place to track performance and ensure you are not penalized due to differences in vendor performance.

Know-How – IT staff require a certain level of expertise to manage IT services in a cloud environment and must stay up to date with ever-evolving cloud technology.

What are the challenges?

In fact, planning a move to the cloud is more complex than physically moving the data. First, you need to find the right cloud service provider (CSP) for your business. And secondly, you need to make sure that the service you choose includes all the core features that meet your needs. Here are some of the challenges you might face when migrating to the cloud.

Your new CSP will play a central role in supporting your future IT and business goals. That's why choosing the CSP that's best for your business is a crucial step on the journey to the cloud. To do this, you must first determine your business needs and then choose a service provider that exceeds them. You never know when these demands will increase, and changing CSP can be just as difficult as changing energy supplier! If you're not comfortable with a complete move to the cloud, moving to a virtual server can be a good place to start. CSPs use different methods to deliver cloud services: private cloud, shared cloud, public cloud, and hybrid cloud, with each model meeting specific business and security needs of organizations.

Step By Step Guide

A successful move to the cloud depends on the complexity of the application architecture, the level of application coupling, and the amount of work you are willing to invest in the migration. The phased model shown in the diagram below shows the step-by-step process that most organizations choose to migrate to the cloud.

Phase Driven Approach to Cloud Migration: Step By Step

CLOUD ASSESSMENT PHASE

- Assess Cost
- Assess Architecture
- Assess Security

PROOF OF CONCEPT PHASE

- Learn CSP
- Build a Pilot
- Build Support within the organization

DATA MIGRATION PHASE

- Leverage different storage options
- Migrate

APPLICATION MIGRATION PHASE

- Forklift Migration
- Hybrid Migration Strategy

LEVERAGE THE CLOUD PHASE

- Auto-scaling
- Automation
- Elasticity
- Hight Availability

OPTIMIZATION PHASE

- Utilization
- Monitoring
- Efficiency
- Performance
- Re-engineering

The cloud – an explanation

What exactly is cloud computing? If you enter this term into a search engine, you will receive a variety of definitions. Basically, cloud computing is the provision and use of services over the Internet. These are usually storage space, databases, servers, software or network components, which are offered under the collective term cloud computing services.

What are cloud computing services?

There are three categories of cloud computing services:

SaaS	PaaS	IaaS
Software as a Service	**Platform as a Service**	**Infrastructure as a Service**
...provides applications from the provider	...provides a programming model and development tools	...provides basic IT resources
Software application in the cloud	Development and deployment environment in the cloud software application	IT infrastructure in the cloud
(consume)	(build)	(host)

Where do these services run?

Apart from the fact that all of these services are basically operated in the cloud, there are also differences in the type of cloud.

Public Cloud

A public cloud is operated and managed by a cloud provider. This includes ensuring availability, security and proper use by you as a customer. You share the cloud and the network with other companies, with your instances within the cloud being completely separated from other users by so-called virtual clouds.

Private Cloud

Are you the only user in the private cloud? Of their? Cloud. Private clouds can be operated physically in your company or in a local data center. The network is privately managed and includes all services as well as the infrastructure used. The administration can be carried out directly by you or by an external provider.

Multi Cloud

The multi cloud is an environment that consists of several public clouds. With the Multi Cloud, different applications can be operated in different environments - depending on which environment best suits which application. This not only has advantages for performance, but also means a certain independence from a provider, increased redundancy and old applications do not have to be transferred to new platforms.

Hybrid Cloud

The hybrid cloud is a combination of the public and private cloud. These two platforms are connected to each other, allowing resources to be shared. For example, the scalability of the public cloud can be used synergistically with the dedicated security of the private cloud.

Reasons for Cloud migration

Does your company maintain a custom application that your employees use to market products or manage customer relationships? Are you a developer marketing an enterprise software solution that runs on a local server or in a traditional data center environment? If you want your employees to get more done? or your application's user base is growing?, then the next logical step is to move your application to the cloud. Below we have listed the top 10 reasons to outsource your application to the cloud.

Cloud Computing...

1. ... opens up agile application development thanks to microservices.
2. ... increases the security of your application.
3. ...offers unlimited computing power for your application.
4. ...increases the availability of your application.
5. ...reduces application management challenges.
6. ...increases your user base.
7. ...relieves your internal IT staff.
8. ... enables your company to focus more on generating revenue
9. to concentrate activities.
10. ... opens up cost savings for you.
11. ... increases the speed of your application.

Data protection in the cloud

Despite all the benefits that the cloud brings, there are still concerns about protecting sensitive data. From discussions with our customers, we were able to define three topics that they were concerned about. For each aspect on the left, you will find an explanation on the right of how cloud providers deal with it.

LOCATION OF THE DATA

Due to global networking and the virtualization of the cloud, the location of the data is neither recognizable nor clear.
You have the opportunity to decide for yourself where and how your data is stored. This includes not only the selection of the cloud location itself, but also the security or encryption method used. In this way, cloud providers give control of data back to their customers, thereby alleviating concerns about data location.

LEGAL RISKS

Compliance with legal obligations, such as the obligation to retain or provide evidence or the guarantee of data protection and data security cannot be conclusively confirmed because the data is located in data centers scattered around the world. By transferring ownership and control of customer data from the provider back to the customer, data protection can also be guaranteed in the cloud. Customers can choose the cloud location for storing their data, regulate access management to customer content, services and resources and determine the way their content is secured and encrypted.

ACCESS BY AUTHORITIES

By distributing the data to different data center locations worldwide, it can also be stored (or processed) in countries that have no or insufficient data protection. In addition, authorities in these countries can demand the release of data based on the legal basis of their respective countries. In most cases these vary per country. And this in turn is often not known to the owner of the data.
The choice of cloud location by you as a customer does not leave much room for this concern from a location perspective. In addition, many cloud providers clearly express their position regarding the disclosure of data. Cloud providers agree to disclosure only upon customer request, based on a valid and mandatory instruction from a government or regulatory authority (see AWS), or if disclosure is required by law (see Microsoft Azure).

In summary, we say: Fears regarding data protection in the cloud are correct and, above all, important. But this doesn't just apply to the cloud but should apply to the provider search in general - regardless of where the infrastructure is located. Due to the same requirements for application operation that cloud providers have created, operations in the cloud are now on the same level in terms of data protection and data security as a local infrastructure.

Limits of the cloud

The cloud also has limits. However, it is important to distinguish which cloud we are talking about. Just as the different clouds cover different needs, the boundaries of the individual platforms also differ.

LIMITS OF THE PUBLIC CLOUD

- Not all desired services or products are available in a cloud provider's public cloud.
- Difficulties in complying with regulatory requirements where data cannot reside outside a specific country or multiple countries - such as the EU.
- Difficulties in complying with data protection regulations, including with regard to data that specifically requires protection (such as HIPAA medical data, financial data (Basel II) or legal data (eGov, GovCloud)).

LIMITS OF THE MULTI CLOUD

- See public cloud
- Controllability of data flows without special data links (connections, VPNs or dark fibers) is less than with the public cloud. The transfer between data locations (regions) plays a role, which is far less clear in the multi-public cloud than in the public cloud.

LIMITS OF THE HYBRID CLOUD

- See public cloud
- See Multi Public Cloud
- Technical implementation and compatibility of both infrastructures, as access to both the local systems and the cloud must be guaranteed. The correct configuration of, for example, service brokers, VPN access, API gateways or approved service access play a major role here.
- Maintaining a high standard of security as the needs of both infrastructures must be consistently covered.

LIMITS OF THE PRIVATE CLOUD

- Limitations on the availability, development, deployment and maintenance of services, such as highly redundant databases.
- Limitations in physical form, such as scaling, availability of hardware and services, and the use of multi-regions.
- Additional effort due to maintaining your own data center or operating your own servers with the corresponding availability. It is operated either in-house or by an external service provider and requires regular maintenance and 100% reliability (network, power and redundancy are important).

Managed Cloud

Every cloud needs to be managed. That's a fact. However, there is a difference in the type of management that makes a managed cloud. As a company, you usually hire new employees or train existing employees so that they can take over the management of the entire cloud infrastructure. With the managed cloud, however, an external partner takes over the complete management of the cloud. First and foremost, this means that you can concentrate completely on your core business and do not have to become an expert in cloud computing. Because that's why you have your partner. But what exactly are the tasks of such a partner?

Managed Service Provider

Companies that offer their services to manage an infrastructure are Managed Service Providers (MSP). This infrastructure management can be transferred to any platform and therefore also exists in a cloud environment. Managed service providers as cloud partners support companies either on their way to the cloud with an existing architecture or in optimizing an architecture already hosted in the cloud. He takes on all tasks related to your cloud architecture - consulting, setup and configuration, administration and optimization. With this range of services and the corresponding know-how, managed service providers act as an interface between their customers and the vast world of public clouds.

For this reason, the managed cloud is the perfect mix between a highly available, scalable and fast platform and a reliable, consistently available partner with a lot of expertise. If you need further reasons for operating your application in a managed cloud - we have put together a few for you below.

4 reasons for managed cloud

Cloud Landingzone

The managed cloud offers the right setup for your application and the associated requirements because: the MSP puts together the instances of your managed cloud based on your setup and relies on specialist knowledge, experience and best practices.

Costs

The managed cloud allows you to save on personnel costs because: the MSP takes over all tasks related to cloud operations for which you would have hired new employees.

Migration

The managed cloud offers you a problem-free migration of your existing setup because: the MSP analyzes your setup and plans the migration as well as the architecture and implementation completely.

Availability

The managed cloud offers you permanent availability of your setup, including your application, because: the MSP not only sets up the entire setup in the cloud, but also takes over the monitoring of the instances and the application.

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What services you can expect from us as a customer?

Cloud Migration

We support you step by step so that you can move your company to the cloud quickly and smoothly. As a managed service provider, we give companies more time so that they can concentrate on their core business.

Application and monitoring

We ensure that your instances are permanently available and ensure that your application runs smoothly. If there is a malfunction, we will inform you immediately and take immediate action to correct the error.

Managed Services

We take over the management of your platform with 24/7 monitoring and support, maintaining your systems, installing updates, optimizing resources, ensuring the highest security standards and managing your instances.

Consulting

Based on your needs, we design your individual setup and bring your solution to a redundant, automatically scaling and secure platform in the private or public cloud. We use DevOps methods and support your IT department in its development cycle with this approach to enable you to achieve continuous integration and continuous deployment (CI/CD).