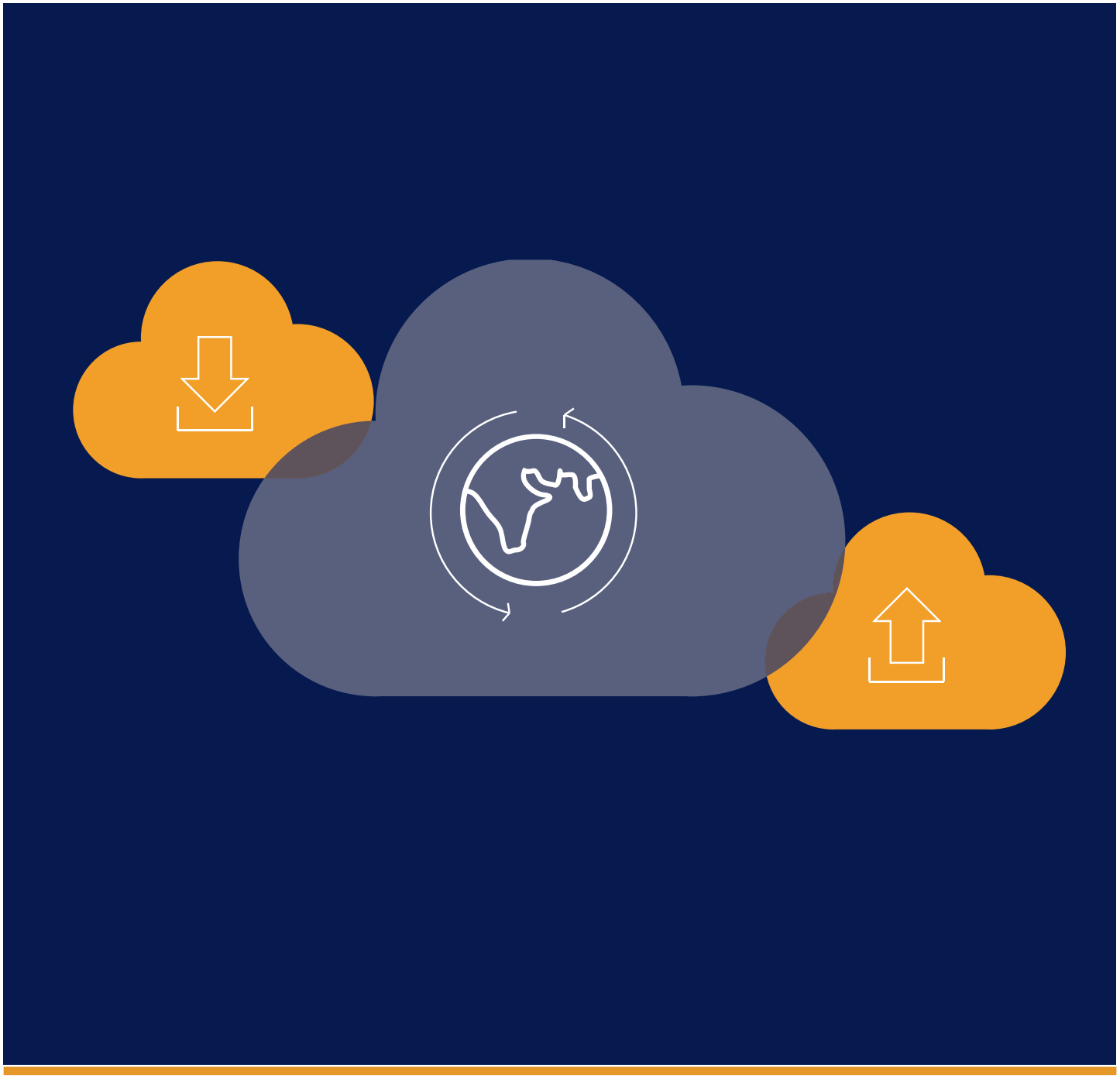

SERVICE MANAGEMENT IN THE PUBLIC CLOUD

Sourcing within the Digital Transformation

A strategy paper created on behalf of 1&1 IONOS Cloud GmbH

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EXECUTIVE SUMMARY

- In the coming years the Public Cloud will inevitably continue to take hold. From a technical point of view, the use of dynamic infrastructure is the only means to respond to ever changing market situations and to address them in a proactive fashion.

- The black box Public Cloud makes it harder for IT organizations to keep sight of the big picture and to live up to their supervisory obligations. This becomes evident mainly through the lack of close ties to the actual IT operations of the cloud infrastructure.

- The use of Public Cloud infrastructure is based on the shared responsibility model in which the responsibilities are clearly separated between the provider (physical environment) and his clients (logical environment).

- In addition to the full responsibility for the logical environment, the customer does not only need to find an answer to the question of how to handle the black box - the physical environment - but also how to measure the services of the cloud provider at this level in order to maintain control.

- With ITIL, CIOs have a powerful framework at their disposal which enables them to monitor the public cloud provider at all levels. Through established ITIL procedures, they can provide the business side with the facts that are required for reporting.

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SERVICE MANAGEMENT:

IT OPERATIONS UNDER CONTROL

Keeping a complex IT environment under control is no easy task. The IT department not only must tackle constant challenges within the digital transformation of its company, but it must also ensure that reliable IT infrastructure, required IT services, and a fail-safe are available at all times. In this context, the needs and requirements of the user also have to be taken into consideration and adapted on a continual basis.

IT Service Management: Rating and Development

Controlling such a robust IT infrastructure is only possible by means of predefined processes designed to meet expectations and create benchmarks that will serve as guidelines to follow. The approach to IT service management is mapped in a process model in which all the necessary processes and procedures are defined. Here all modifications are added to an ongoing evaluation procedure in order to enable continuous improvements. This ITSM[1] process model is mapped in an ITSM framework, thus creating the basis for a comprehensive and seamless description of all IT processes within the company. For this purpose, the model not only helps define the critical path in the entire process sequence, but also outlines the responsibilities of the individual service elements. In this way the IT organization receives standardized processes which are utilized to improve the quality standards as a part of the total quality management (TQM), ensuring the best possible support for the enterprise business processes. Some of the most renowned ITSM frameworks are:

- MOF
- eTOM
- COBIT
- ITIL

Over the years ITIL[2] has established itself as the industry standard. In the late 1980s, ITIL was developed by the British Central Computing and Telecommunications Agency (CCTA) in order to substantially improve the quality of purchased IT services and reduce costs. In doing so the CCTA pursued the goal of developing a feasible and economical procedure for the purchase and delivery of IT services. This procedure is mapped in ITIL.

[1] ITSM = Information Technology Service Management

[2] ITIL = Information Technology Infrastructure Library

Importance and Relevance of IT Service management

The purpose of frameworks like ITIL is to transform the structure of an IT organization, typically of a technical nature, to a customer or service oriented organization with a special emphasis on the improvement of service quality.
In adopting this framework, all IT processes will be clearly defined with procedures aligned to the customer.

This framework is especially attractive to IT decision makers who are outsourcing their IT infrastructure operations.

IT service management represents an important means of defining the management of all customer-supplier-relations in order to set up distinct responsibilities.

With respect to the utilization of service management frameworks like ITIL, one thing must be taken into consideration. Although the frameworks do define what measures must be taken, they do not definitely say how to implement these measures. Therefore, ITIL only offers a best practice collection of procedures to be used in the introductory and transformation phases towards a service driven organization.

IT SERVICE MANAGEMENT AS PART OF THE PUBLIC CLOUD STRATEGY

In short, public cloud computing can be summarized as a business model that defines the way IT resources are provided and used. Because this kind of IT usage causes many of the traditional IT operations to fall under the responsibility of the provider, service management takes on a new and different role.

Responsibility in the Public Cloud

By using the Public Cloud the customer deliberately purchases IT resources as a service through an on-demand model from a Public Cloud provider.

Because the provider implements the ITIL processes among those IT resources, the customer does not have to take care of them himself. On the side of the customer there are nevertheless many process activities that he needs to use in order to make sure that his purchased cloud services and resources are available and usable as required.

Unfortunately, it is difficult for the customer to keep track of developments in the cloud due to lack of transparency of the providers' supervisory body and the assessment of their provided services. This is especially true for companies that have no prior experience in the field of conventional outsourcing; as a result, such organizations are not familiar with the monitoring and controlling of an IT service provider.

In this respect, the biggest challenge is the lack of close ties to the actual IT operations within the Public Cloud infrastructure. The basic IT infrastructure and the services required for the creation of the virtual environment are after all provided and operated by the provider. Because of this the customer sees the Public Cloud infrastructure as a black box that he simply accesses via APIs[3]. However, this is a well thought out concept. The usage of the Public Cloud infrastructure is based on the shared responsibility model in which the responsibilities are clearly separated between the provider (physical environment) and his clients (logical environment).

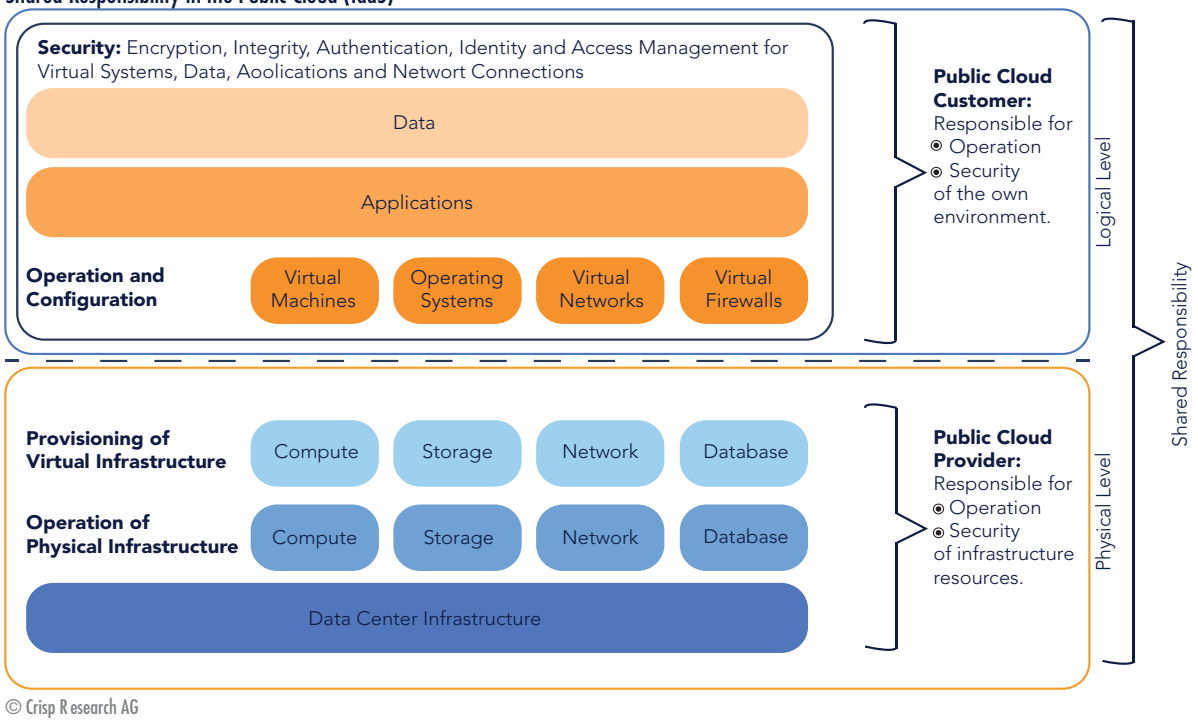
The provider is responsible for the operation and the security of the **physical environment**. He takes care of:

- setting up the data center infrastructure
- providing computing power, storage space, network, managed services (like databases) and other platform services if required
- providing the virtualization layer over which the customer can request virtual resources any time
- providing the services and tools that the customer can use to fulfill his tasks

The customer is responsible for the operation and the security of the **logical environment**. This includes:

- setting up the virtual infrastructure
- installing operating systems

Shared Responsibility in the Public Cloud (IaaS)



One proven solution is Service Level Agreements (SLA), in which the services that are to be provided are contractually fixed. Within the ITSM context these services can include:

- **Availability Management:** Definition of the expected availability of cloud infrastructure and services
- **Capacity Management:** Setting up the required amount of resources in the form of infrastructure services
- **IT Service Continuity Management:** Definition of the activity and recovery plans in case of unscheduled events
- **Information Security Management:** Assurance of confidentiality, integrity and availability of all data, information and services
- **Service Transition**: Coordination during development, expansion and provision of new or modifed IT services
- **Continual Service Improvement:** Support during the ongoing improvement of IT processes in order to optimize effectiveness and efficiency

As a customer it is essential to constantly monitor the logical and physical environment of the Public Cloud.

Within the logical environment the customer bears full responsibility – and it is on this level where he should define his individual ITSM/ITIL process model. In the physical environment he has no influence and his actions are limited to observing and monitoring.

As a principal, however, his task is to implement measures in order to control the provider, as he is obliged to provide proof to the business side that the purchased infrastructure and cloud services are available as required and add value to the business processes.

ITSM PROCESSES IN THE PUBLIC CLOUD

A holistic approach with the implementation of IT service management helps the user's company to utilize cloud computing in such a way as to optimize an existing service or to implement a new one. One glimpse at the ITIL service lifecycle is enough to find out which processes in the Public Cloud are relevant, which processes remain with the user, and which processes will be taken care of by the provider.

Service Strategy: Sourcing in the Public Cloud

The service strategy is a critical component when it comes to the utilization of cloud computing. In this area it is all about the strategic decision regarding which cloud services fit the organizations IT strategy, including current and future IT architecture, and the sourcing model of the IT organization.

The importance of ITIL in the context of usage and provision of cloud services
IT Organization vs. Cloud Provider

	ITIL for the cloud customer	ITIL for the cloud provider
Service Strategy	Orchestration of service-based solutions by combining the offerings and services of different cloud providers.	Development of services that are offered on an on-demand basis. Here the demand management is one of the essential components.
Service Design	Focus on the integration of services of cloud providers and on the development of protection measures.	Centralization of service packages (modules) for a more convenient usage on an on-demand basis. The capacity management is an important key to success.
Service Transition	Management and control of a sophisticated cloud environment consisting of different releases and changes that encompasses a multitude of different cloud providers.	Simple and smooth provision of services as well as assurance of a secure access to these services.
Service Operation	Assurance that the added value is realized as expected and that measures in case of service failures are being coordinated and initiated across providers.	Assurance that the added value is realized as expected and that the services are seamlessly provided.
Continual Service Improvement	Provisioning of the required transparency with all findings and measures for the coordinated improvement of services as well as their provisioning by all providers.	Provisioning of all means and measures to maintain a competitive edge. This includes the assessment of customer satisfaction in order to ensure quality.

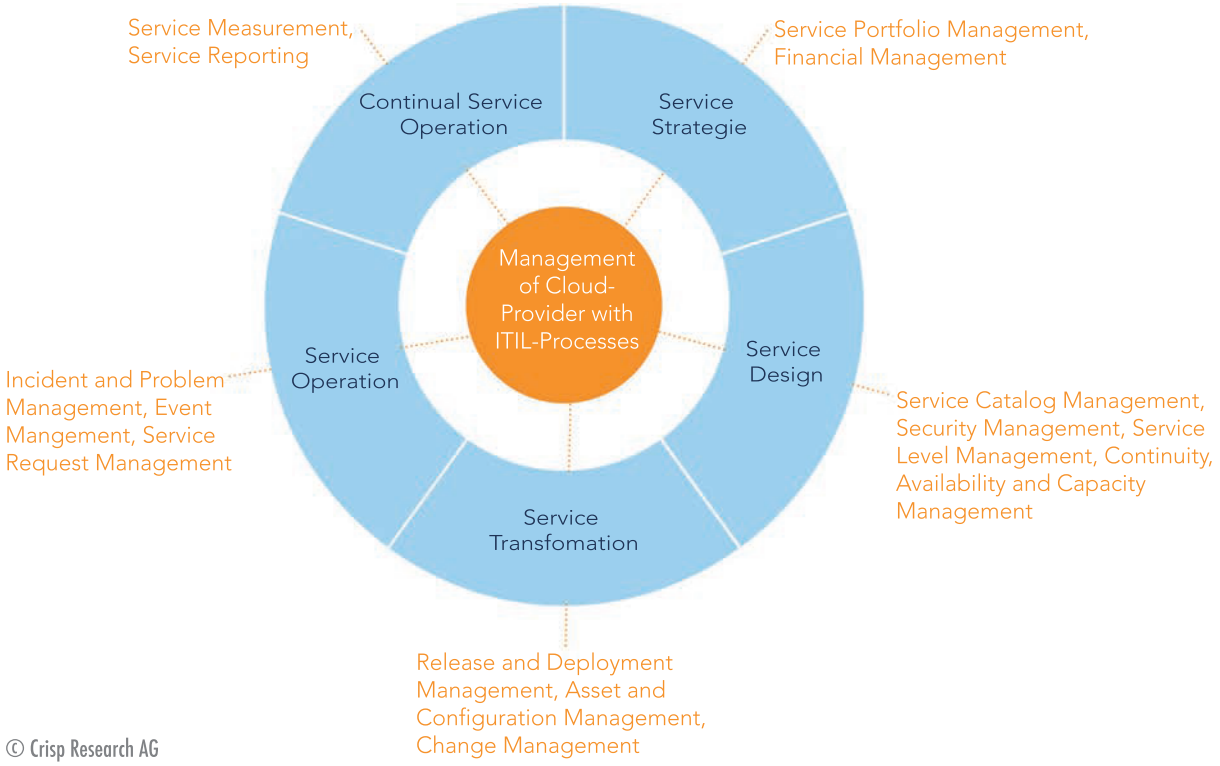
With regard to the sourcing strategy, service portfolio management and the financial management play an especially decisive role. Market insight and a good understanding of the provider portfolio and its services are important criteria in order to successfully meet your business requirements.

Public Cloud sourcing also affects the charging processes since cloud services are no longer procured directly; instead these services are purchased by the cloud provider who adds his expenses to the service costs.

Service Design: Keeping an Eye on the Supply Chain

As part of the Public Cloud utilization the supplier management and the SLA management are the two central processes regarding the service design.

On the one hand, the cloud has given rise to a wide variety of concerns regarding how compliance and governance regulations can be met. On the other hand, it is necessary to contractually agree on the availability of services, the provisioning of relevant capacities, and other factors by means of an SLA.



After business relations have been consolidated, the active management of the provider begins. This means that the IT organization must monitor the costs, the quality of the services provided and ensure that the cloud services are properly integrated into its own service catalog.

Service Transition: Keeping an Eye on the Service Lifecycle

Change-, release- and configuration management are indispensable elements of a smooth IT management. However, in the field of Public Cloud sourcing they are less important.

For one thing, the customer has no direct influence on the service management of the cloud provider. The provider offers a highly standardized, one-size-fits-all service portfolio which is then individually adapted to customer needs through SLA definitions.

Nevertheless, the cloud provider has the obligation to provide transparency to the customer and should inform him about changes and new features as soon as possible.

Service Operation: Efficient and Effective - End-to-End

In order for an IT organization to be able to live up to its obligations as the supervisory body of the Public Cloud provider, it is of utmost importance to integrate the provider's incident and problem management processes into its own business processes. To do this the customer must establish a seamless, end to end relationship with the cloud provider to enable a continuous exchange of requests and incidents. This is the only way to make sure that all necessary services are executed effectively and efficiently.

Continual Service Improvement: Things must go on

In the field of Continual Service Improvement, the IT organization is only regarded as a controller, or observer, of the Public Cloud provider. It has no direct influence on the improvement of cloud services. Instead, the provider takes on the full responsibility for this and is obligated to exercise diligence including informing his customers of all changes in a timely manner.

As a watchful eye, the IT organization of the user company bears the responsibility to identify and recommend improvements on the side of the public cloud provider, and to align these improvements with the possibly new requirements of the business side.

ITIL BEST PRACTICES: 5 QUESTIONS THE CIO HAS FOR PUBLIC CLOUD PROVIDERS

The importance of the Public Cloud will continue to grow in the coming years. From the technical point of view, the use of dynamic infrastructure is the only way to respond to changing market situations and to address them in a proactive fashion. With ITIL, CIOs have a powerful framework at their disposal enabling them to control and monitor the Public Cloud provider at all levels. Through this framework they can provide the business side with the facts that are required for reporting. With regard to ITIL there are five essential questions for Public Cloud providers that CIOs should keep in mind:

1. What ITIL Best Practices has the cloud provider implemented?

Get an overview of the best practices the cloud provider has implemented. The width and depth of the implementation are an indication of the quality of services and the delivery capacity.

2. Which availability levels are guaranteed?

Familiarize yourself with the different availability levels of the provider.

Negotiate with the provider if the standard does not fit the requirements of your enterprise.

3. Does the cloud provider cooperate with third-party suppliers?

Take a close look at the internal supply chain of the cloud provider to get an idea of the external service providers the provider needs in order to ensure his delivery capacity. Who are these service providers and how is the provider planning to mitigate any risks associated with third-party arrangements?

4. Which metrics that can be controlled meaningfully does the cloud provider offer?

Hard data are an important criterion in order to identify the quality of services. The provider should be willing to cooperate with you in an open and transparent fashion; he should also provide the interfaces necessary in order to evaluate his performance potential.

5. Which continuity plans on an infrastructure level does the cloud provider have?

Has the cloud provider shown you detailed action plans in order to understand whether or not and how data is recovered, how long this process takes, if he differentiates between customers (priority list) and to which extent the provider implements and documents his continuity plans.

About 1&1 IONOS

With more than eight million customer contracts, 1&1 IONOS is the leading European provider of cloud infrastructure, cloud services, and hosting services. From VPS and bare-metal servers all the way to high-end IaaS solutions: 1&1 IONOS offers SMEs and large companies all the products they need to set up their hybrid or multi-cloud environment and is the only IaaS cloud computing provider that has its own code stack in Germany. 1&1 IONOS operates one of the world's largest and highest-quality IT infrastructures with over 90,000 servers. In the Cloud Vendor Universe from Crisp Research, 1&1 IONOS has repeatedly been named one of the leading providers of cloud platforms.

The Enterprise Cloud by 1&1 IONOS is the "Cloud – Made in Germany" with a data protection-compliant IaaS platform developed in-house for companies, system vendors/integrators, and managed service providers. It is flexibly scalable and provides free 24/7 support by qualified system administrators. During operation, the capacity of all components can be adapted to current requirements through live vertical upscaling.

1&1 IONOS was established in 2018 after the merger of 1&1 Internet and Berlin-based IaaS provider ProfitBricks and is part of the listed United Internet AG.

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Rene Buest is the author of numerous professional articles on Cloud Computing and technology, as well as a lecturer and member of expert panels. He writes about cloud computing, IT infrastructures, technologies, management and strategies on CloudUser.de. He holds a master's degree in Information Science from the Bremen University of Applied Sciences, as well as an M.Sc. in IT Management and Information Systems from the Paderborn University of Applied Sciences.

ABOUT CRISP RESEARCH

Crisp Research AG is an independent IT research and consulting company.
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Crisp Research was founded in 2013 by Steve Janata and Dr. Carlo Velten.
The company focuses its research and consulting services on "Emerging Technologies" such as Cloud, Analytics or Digital Marketing and their strategic and operational implications for CIOs and decision-makers in companies.

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