Relocate your VMware workloads to the cloud

Fast own SDDC or flexible VMware IaaS

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Introduction

Exploring the cloud for digital services is en vogue. But experimenting is only one side of the medal. The other side is hard work: How do you bring your classic workloads from a legacy environment to the future sourcing standard, the cloud?

The transition of legacy workloads into the public cloud presents a multitude of operational challenges for companies today. With the majority of legacy applications running on VMware on-premises today, VMware Cloud on AWS provides a seamless solution for companies looking to transition their legacy workloads into the AWS cloud quickly and easily with minimal risk.

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All in digitalization

Digitalization and with it the cloud are the new standard and examples can be found anywhere: Parcel deliveries with drones, chatbots providing customer service or software-defined cars that develop from vehicles to travel companions – while connected things (IoT) are already established, Artificial Intelligence, one of the big game changers, is only discovering its potential.

However, digitalization is rearranging the competitive landscape. Manufacturers who do not connect their products, retailers without online shops or health insurers without digital services will lose market share to faster, more agile or more customer-oriented competitors.

Respond to modern customer demands

Whilst efficiency and cost reduction have been the driving corporate goals for many years, innovation, customer satisfaction and responsiveness to market demands are the new critical building blocks of success in the digital world.

A study from the Boston Consulting Group confirmed that the vast majority of companies are prioritizing digitalization initiatives[1]. 75 percent of those questioned in the study stated that the digital transformation is on the agendas of the CEOs or top management – along the entire life cycle of the initiatives. More than 80 percent of those surveyed also state that their companies will accelerate digital initiatives (probably also against the background of their experience with Covid-19). 65 percent even expect increased investments in digitalization.

And the status of digitalization?

The will to digitize is strong, but implementation is lagging behind. IT skills are an excellent indicator of the degree to which digitalization has been achieved.

Long release cycles and maintenance windows of six months or more for off the shelf, on-premises applications are still typical for many companies whilst cloud-based apps and SaaS are seamlessly updated and upgraded on an ongoing basis. Capacity bottlenecks of internal IT can also negatively impact application performance, which can directly affect business activities – and this also affects the experience users and customers have with the company's services or products. Although these limitations are well-known and 88 percent of companies have a cloud-first strategy, 86 percent of infrastructure budget is still directed to on-premises technologies. Investment in legacy systems and applications accounts for approximately two thirds of the time and financial spend.

Since innovation is reliant on IT, IT skills and capabilities play an essential role in the digital world. A lack of features and flexibility, outdated architectures or processes can have a devastating effect on competitiveness. **Is it any wonder that the cloud is becoming the number one digital enabler for companies around the world?**

The reality is: Many companies still largely rely on tried and tested IT architectures, and cloud migration and modernization still have room for improvement. The good news: It's not too late to jump on the cloud bandwagon to prepare for the future – and the first steps can be surprisingly easy.

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Paths to the cloud

Migrating to the cloud is often falsely classified as a pure infrastructure task. Any cloud transformation should start with considering the impact on services and business processes.

The applications that support these processes therefore play an important role. And they are also the starting point for the cloud transformation. Typically, companies start their cloud journey by developing new "cloud-native" modern applications directly in the cloud. To drive a more holistic cloud strategy, companies need to assess their existing application landscape to determine their readiness for cloud migration and the right migration path.

Enterprises should decide based on business, technical and financial criteria, what is the most suitable migration path for each and every application. AWS developed the 7R methodology based on a Gartner concept.

7R methodology (Gartner/AWS[2])

- **R**etain — the application is kept unchanged. This creates hybrid solutions in which the classic IT world and the cloud world are operated alongside or with one another.
- **R**etire — the application is switched off because it only provides minimal business benefits.
- **R**epurchasing — an application is replaced by a standard (cloud) product, for example a SaaS.
- **R**ehosting — "lift and shift", the application is elevated from an on-premises infrastructure to a cloud infrastructure, while remaining largely unchanged .
- **R**elocate — the application and its virtualized infrastructure is moved from on-premise infrastructure, while remaining largely unchanged.
- **R**eplatforming — the application's core architecture remains unchanged, while a few minor adjustments are made, e.g. the transfer of databases to open source such as PostgreSQL.
- **R**earchitecture /**R**efactor — cloud-native redesign of the application.

In an ideal world applications are going microservices

In order to leverage the full potential of the cloud, applications should be consistently tailored to cloud operating models, i.e. they should be based on microservices architectures. Ideally, they also allow the use of DevOps models including containers. But the effort to redesign the entire application landscape to be "cloud-ready" (refactor/rearchitecture) is usually immense in large companies with home-grown IT application landscapes. In addition, the existing applications definitely have their merits: They have reliably supported the existing business for years.

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But lift and shift is still the standard

The 7R concept therefore implies the emergence of hybrid IT. At least in the medium term, and possibly also in the long term, mixed application landscapes (on-prem/cloud) will emerge in the company's IT. Flexera[3] notes that 87 percent of companies are already pursuing a hybrid cloud strategy. As part of their cloud migration journeys, many companies look to gain their first experience with the hyperscalers by initially focusing on applications that can be migrated with minimal effort and risk – this is known as "lift & shift" or rehosting. In contrast to refactoring an application, this can be implemented quickly and with minimal operational changes.

Relocation can be a great alternative

There is only one hurdle to overcome: Virtualization technologies used on-premises are often different to and incompatible with those used in the cloud. While VM formats can now be easily converted into one another, different virtualization platforms also mean different network and storage subsystems. And that in turn has an impact on performance optimization, ISV certificates, automation and the tool sets used – which in turn influences topics such as high availability, backups and disaster recovery. An effective solution is obvious: **the use of a similar software stack (for virtualization) both on-premises and in the cloud.** This is what the seventh R is about: Relocation keeps the legacy virtualization untouched and preserves it for use in the cloud.

AWS – leading public cloud platform

Amazon Web Services (AWS) is considered the inventor of cloud computing – and for good reason. AWS has established itself as a de-facto standard for the cloud – despite the availability of other hyperscaler platforms, such as Microsoft Azure, the Google Cloud Platform and open source approaches (OpenStack). AWS is still the undisputed market leader, providing more than 200 services, 6,000+ ISVs, lots of managed service providers and an unrivalled global footprint.

Various trends can be observed in user companies: both single-vendor strategies and multi-vendor strategies to avoid a vendor lock-in, with most of these strategies seeing AWS usage as an integral component.

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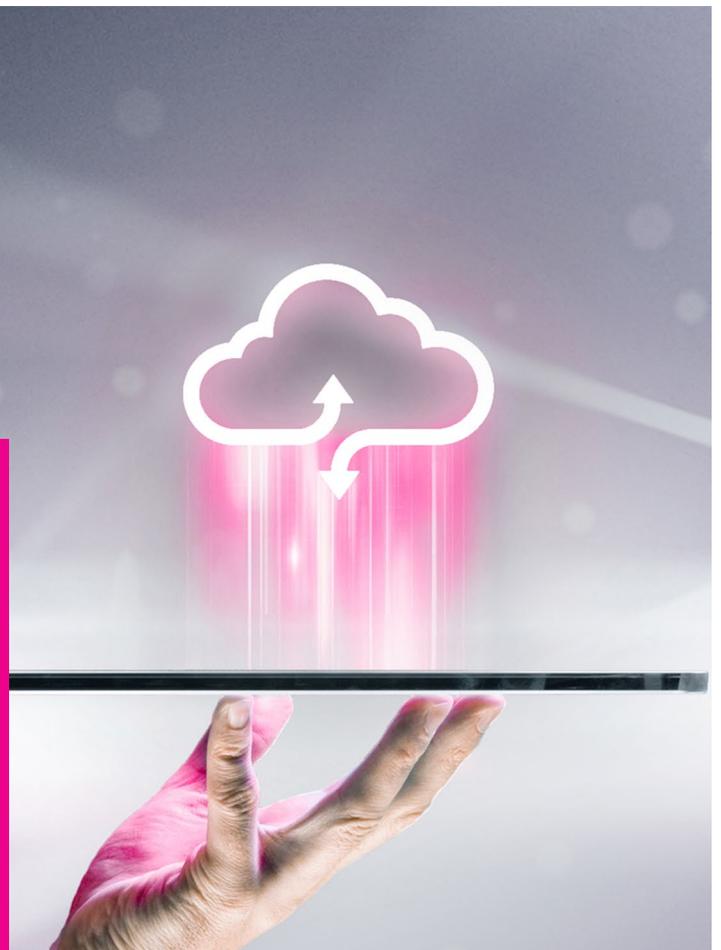
Move legacy workloads to the cloud

While the use of the cloud is still gaining momentum, server virtualization has been established in data centers for many years. VMware is the undisputed leader. In 2019, the company represented more than 80 percent of the market[4]. The software is widely used in data centers of all sizes running the most business critical applications.

But thanks to its current initiatives, **VMware is also an ideal stepping stone on the way to cloud modernization**. Established VMwa-

re technology can be used to transfer existing applications in the sense of a relocation approach to the AWS cloud where they can be modernized leveraging any of the 200 services provided by AWS.

VMware Cloud on AWS uses the VMware tool HCX to provide the means for mass-migration of workloads to the AWS cloud. As an alternative to HCX, vMotion can be used with vSphere replication. Like internal servers, the resources can be managed using the existing tools vCenter and vRealize.
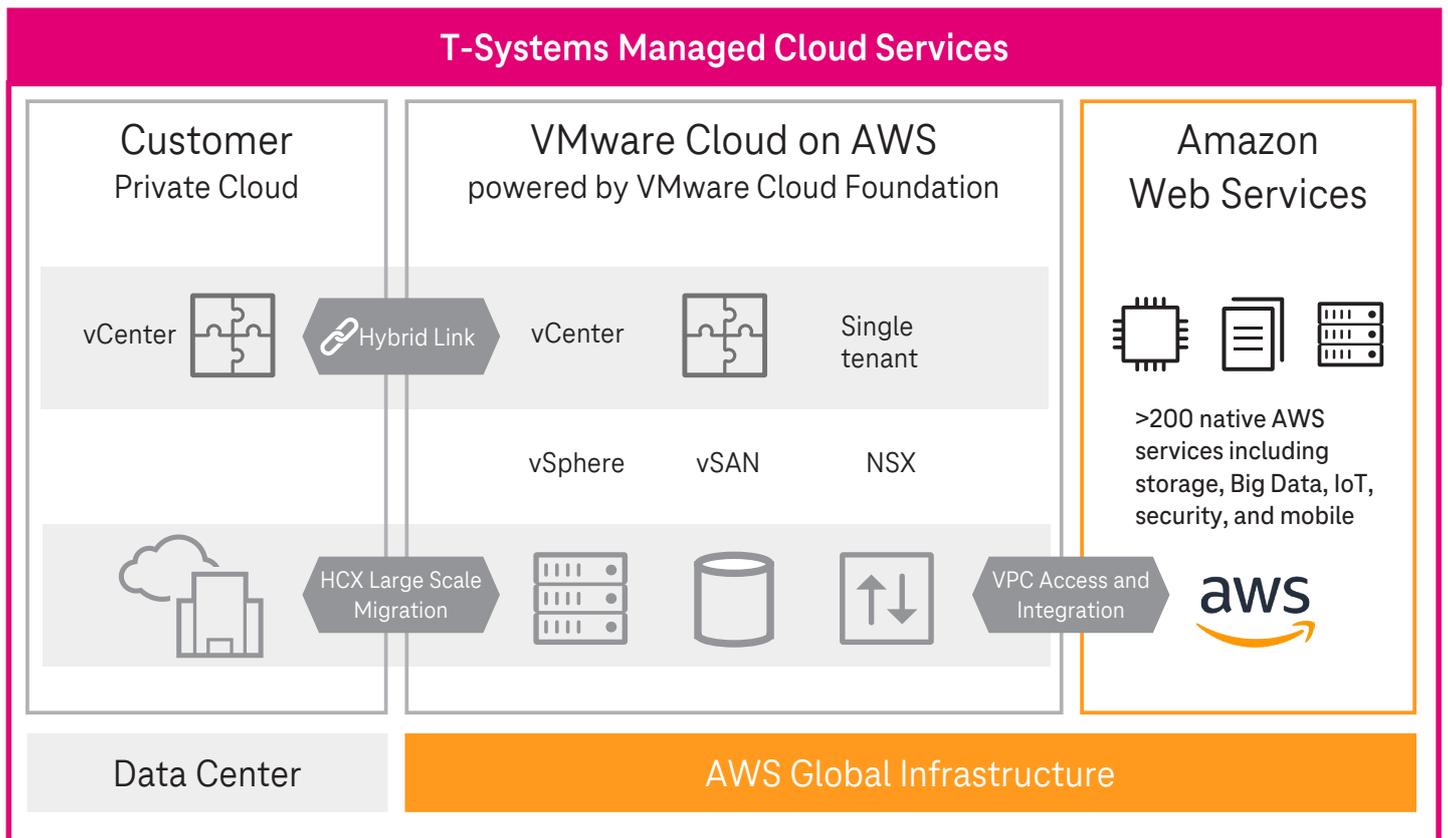
T-Systems Managed Cloud Services

Customer
Private Cloud

vCenter — Hybrid Link

VMware Cloud on AWS
powered by VMware Cloud Foundation

vCenter — Single tenant

vSphere — vSAN — NSX

HCX Large Scale Migration — VPC Access and Integration

Amazon Web Services

>200 native AWS services including storage, Big Data, IoT, security, and mobile

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Data Center — AWS Global Infrastructure

Fig.1: VMware Cloud Foundation: Existing VMware tools are becoming a vehicle for moving workloads to the cloud quickly, easily and risk-minimized.

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It takes only a day to set up a new data center

At the beginning of 2020, the public sector in Germany responded to the economic effects of the Covid-19 pandemic with comprehensive aid programs. These included emergency aid, liquidity aid, debt guaranties and tax incentives. Many small and medium-sized businesses were dependent on the funds being paid out quickly. To achieve this, new short cuts were required at very short notice, to accelerate applications and payments. The administration aimed to give the applicants easy access to the funds. The target date for the provision of the digital solution via the Internet was March 30th.

At the weekend before production launch, load tests demonstrated the current on-premise IT platform would not be able to support the expected load from new payment applications. A solution had to be found at short notice to expand the existing data center capabilities.

It was obvious that only a public cloud operating platform could meet the requirements for scalability and short-term provisioning. The customer approached T-Systems as a multi-cloud provider to discuss possible options. Many of the cloud solutions in question were ruled out due to insufficient performance or a lack of Internet bandwidth. In the end, the decision was made in favor of VMware Cloud on AWS. With VMware, T-Systems was able to deliver the right technology stack that optimally matched the application and the in-house platform. In addition, the underlying AWS infrastructure guaranteed the storage of the data in Frankfurt am Main and enabled a reliable and highly available Internet breakout to ensure that all requests – even during peak loads – were served.

Within three hours, T-Systems set up a software-defined data center (SDDC) with three hosts, which offered a complete VMware stack with compute, storage and network resources. The SDDC used bare metal servers at AWS, which were made available exclusively to the customer. T-Systems operated the platform as a managed service. Another four hours later, the customer had full administration rights on the combined operating platform – including a connection to the internal server backend in the customer's data center. The first servers on the VMware Cloud on AWS were activated and access to the front-end systems via the Internet was established. The combined platform was running 30 hours later.

Combining AWS and VMware for unique advantages

The VMware-based approach allows easy migration of applications to the public cloud resources of AWS. This offers two major advantages: Firstly, the technology stack remains unchanged. This ensures that the applications run error-free in the cloud. Secondly, the operating staff can manage the cloud resources with their established tools and existing skills. The on-premises world and the cloud world are connected in the simplest possible way.

In addition, AWS gives companies access to a wealth of modern services that they can combine with existing applications. In the first instance often S3 object storage is used; in a subsequent replatforming step, existing databases are replaced by RDS, PostgreSQL or a database that suits the purpose far better than a traditional relational database. AWS services can also be used for the rapid implementation of IT automation, IoT scenarios or artificial intelligence. In the security environment, the strengths of AWS and VMware can be combined conveniently: For example, the 256kbit encryption integrated in vSAN can be expanded with the AWS Key Management Service.

Last but not least, the concept of VMware Cloud on AWS also achieves excellent results in terms of return on investment, as a study by IDC shows[5]. The analysts determined a 5-year ROI of 479 percent. The reason for this are the decreasing operating costs due to reduced efforts and faster installation of infrastructures. **Unplanned downtimes are reduced by 76 percent, while application performance increases by 36 percent.**

When moving the dedicated VMware ESXi-based environment to VMware Cloud on AWS, host-based licensing is often still possible. The cloud service itself contains all VMware licenses.

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VMware VMs as IaaS

VMware Cloud on AWS is available in two variants: Foundation (figure above) and Flex (figure below). Foundation addresses customers with use for a full SDDC. Scaling begins with two full hosts.

On top of this T-Systems leverages VMware's Cloud Director Service (CDS). The CDS establishes a multi-tenant platform based on such an SDDC host – which means that users can start with a single VMware VM of 1vCPU and 512 MB RAM. This way a self service offering for IaaS with VMware virtualization becomes available, VMC Flex. It is offered by an Internet-facing portal with plug-in functionality. All functions are exposed via a REST-API.
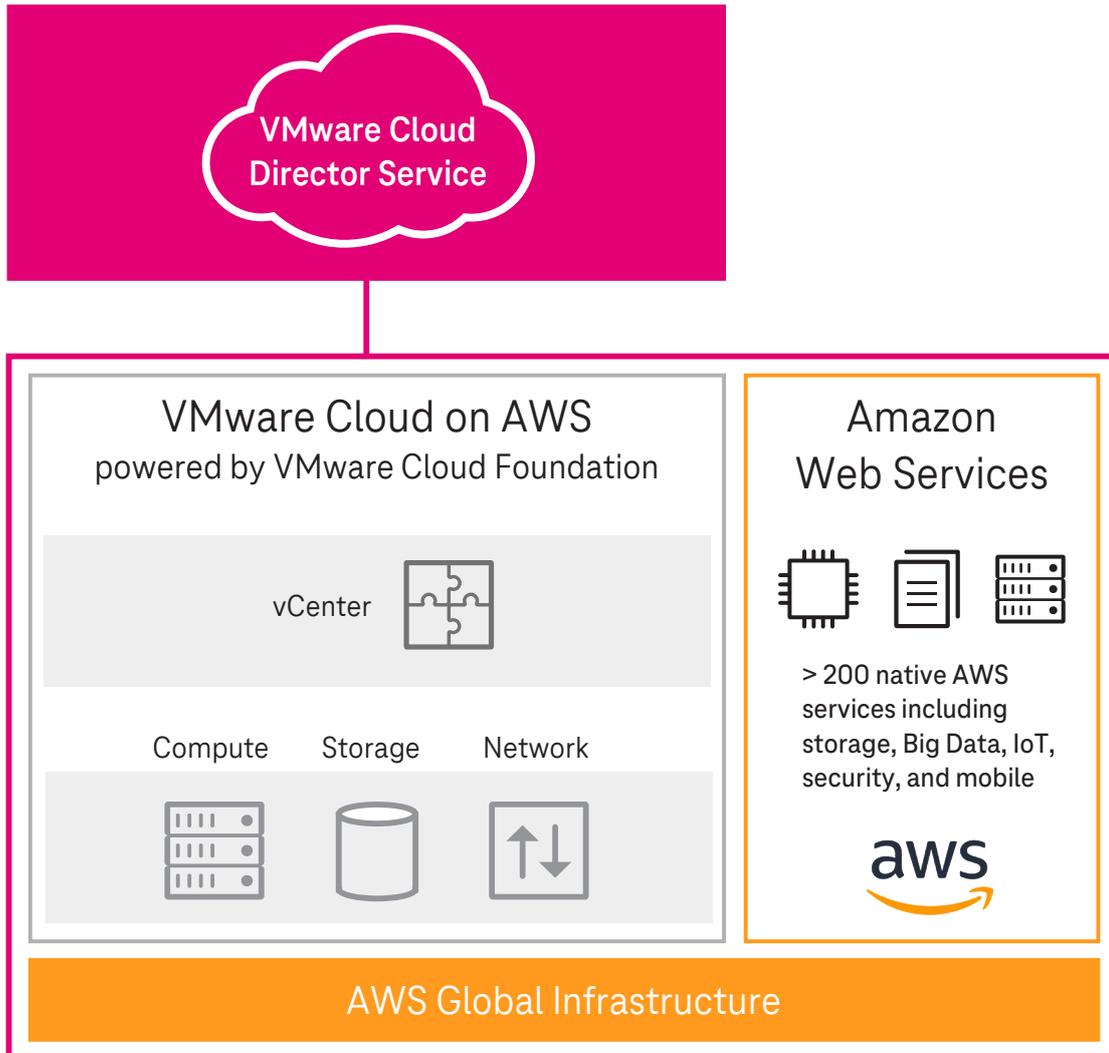

Fig.2: Overview: VMC on AWS Flex

VMC Flex utilizes the usual cloud flexibility with a pure pay as you go model. More than 20 flavors are available up to high performance VMs with 36 vCPUs and 480 GB RAM including full fast scalability over the whole stack under a common management layer. The offering is enhanced with Telekom Managed Service Desk, Incident Management, Billing and Onboarding

Support and provides an SLA of 99,9 percent for a single availability zone.

▶ **Further infos on VMware Cloud on AWS Flex**

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Use cases for getting VMware Cloud on AWS started

VMware Cloud on AWS is optimal for short-term expansions of data center capacities or if enterprises want to get started with the cloud. IT offers a simple access including a perspective for modernizing applications in the medium- or long-term. The global availability of AWS resources also allows companies to quickly expand their global footprint.

Expand your business internationally

As part of its expansion strategy into the American market, a French company is concentrating on the application stack and is consistently reducing its expenses for infrastructure operations. The company is dissolving its own data center and is transferring the workloads via VMware Cloud on AWS in an "as-is" mode to the AWS data center. At the same time, the company is starting an application modernization program and is rolling out the first cloud-native applications in order to expand its market activities in the North America. These are operated directly in the AWS North America region. The company is gaining a stronger business focus, can bring new services to the market quickly and is significantly reducing its infrastructure costs.

Enhanced disaster recovery strategy

A global German company maintains its own data center for its business activities. The application landscape has grown histori¬cally – also through acquisitions. At the same time, howe-ver, the capacities in data center have reached the limit. Further business growth is difficult to support. The company also wants to gain initial experience with AWS. In this situation, the company has decided to use AWS as a disaster recovery (DR) solution. This is intended to free capacities in the enterprise's own data center.

By setting up a VMware Cloud on AWS, the company implemented an identical virtualization stack in an AWS data center within a few days. At the same time, the geo-redundancy requirements of the Federal Office for Information Security can be met, which recommend a distance of 200 km between the primary and DR data center. The DR environment can be copied to the AWS data center using SDDC technology. After a successful transfer, the DR environment in the own data center can be switched off. The IT staff is relieved of the DR tasks and can use the gained capacities for business growth. At the same time, the company's business resilience improves.

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T-Systems as a cloud transformation partner

VMware Cloud on AWS connects the Mode 1 and Mode 2 worlds – but different methods and maxims meet at the interface. To name a few:

1. agility and speed vs. reliability and stability
2. waterfall and ITIL vs. DevOps and containers
3. system stability on infrastructure level vs. application level

The question is: How can "pets" and "cattle" be cared for at the same time?

As a reliable and experienced cloud transformer and an AWS Premier Consulting Partner, T-Systems has extensive expertise in both IT worlds and helps companies to implement individual strategies for realizing hybrid landscapes – with the aim of maximizing the business benefits.

Is your company already pursuing a cloud strategy? Do you want to expand your VMware environment into the cloud? VMware Cloud on AWS ensures the seamless transition of your traditional workloads to the public cloud – including continued use of the VMware technology that has been tried and tested in your local environment.

T-Systems can help – it's your choice: Either you receive your individual, single-tenant VMware SDDC (Software Defined Data Center) on a dedicated AWS Bare Metal environment within a few hours. Or you can benefit from the VMC Flex IaaS offering via self service scaling flexible just from a few VMs up to thousands of VMs. Independent of which VMware Cloud on AWS you choose, you know exactly where your data is located and you can decide for yourself to what extent you enter the cloud and when. T-Systems supports onboarding and offers support via a 24/7 service desk.

**Don't hesitate to reach out to us.
We help you transform your VMware workloads in the cloud.**

Sources
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