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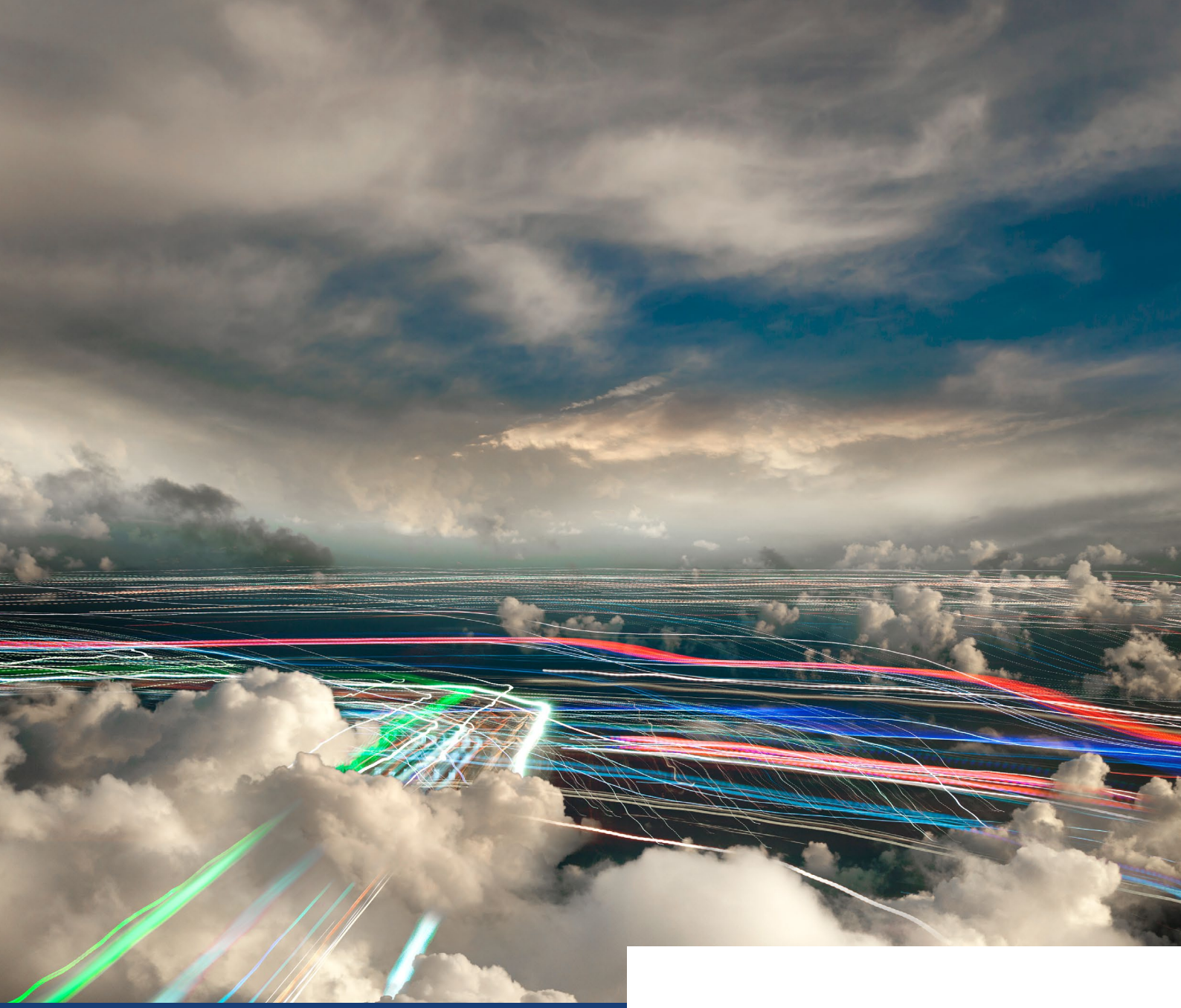
THINGS YOU DON'T HEAR ABOUT THE CLOUD

A LOOK AT CLOUD COMPUTING IN 2020



INTRODUCTION

THE CLOUD MOVEMENT

It is not unusual that **the Cloud is regarded as a major driving force of modern IT**. After all, being used in thousands of business applications, it has changed the way companies operate completely. **And it is gaining momentum**. There are predictions that the term itself will become obsolete by 2025. Why? **Because a world predominantly running on cloud computing is but a vision of a new everyday reality.** In other words, we are looking towards a time when most systems are cloud-driven, making it redundant to state that this is so.

Yet even though the Cloud is off to the races, **the way the technology is described and sold differs depending on the provider**. Yes, it is scalable, robust, reliable, and cost-effective. But there are **some aspects of the Cloud that many companies should be aware of** before they choose a solution and migrate their IT infrastructure.

In this White Paper, we focus on precisely such elements. Discussing **common unforced errors, SLAs, performance of cloud applications, and real benefits**, this document has been prepared to help you understand the nature of the Cloud better, so that you can find a solution that meets your company's requirements and financial resources.

CHAPTER ONE

WHY USE THE CLOUD IN THE FIRST PLACE?

Cloud-based systems and services have been around for quite some time. So we can find information from current users, who explain what initially drove their decision to move to the Cloud. Companies identify **instant access to data from any location (42%), disaster recovery (37%), and relieving staff of work overload (36%)** as critical reasons for cloud adoption**. Since average savings from cloud migration are about 15%** (for small and medium businesses up to 36%), the economic aspect also plays a major part in the decision-making process.

Another incentive for cloud migration is **flexibility**. The Cloud allows its users to **scale it up and down at any time, according to their needs**. They need to bear in mind, however, that this flexibility may come at a cost, meaning **there more changes one makes to their Cloud, the less predictable their price becomes**. Thus, the key here seems to be finding the right balance.

Moving to the Cloud is not merely a technological change. It also a big challenge from the financial perspective as **the company suddenly stops using the Capex model and moves to Opex**. Many cloud users are shocked when they need to make their first payment and receive invoices covering dozens of items telling them next to nothing except that the price is higher than they expected. Here, again, the topic of flexibility returns. To avoid such situations, when choosing a Cloud, one needs to **check the price of all the features they wish to include** – and to do so very carefully. That way, there will not be any unpleasant surprises. Also, keep in mind that many providers offer discounts for long-term subscriptions. Depending on the number of resources and time for which a client is to use cloud computing powers and storage, **one can save up to 70%**. So, make sure to keep an eye out for the best offer.

CHAPTER TWO

BEWARE OF THESE COSTLY MISTAKES

To be able to use the Cloud to its full potential, **it must be properly implemented, well-managed and monitored**. To save money, however, one needs to be in full control of resource usage. Why? Because when it comes to the Cloud, **every minute of keeping unused resources up and running is nothing but an expensive waste.**

Many businesses tend to make similar mistakes when moving to a cloud environment. Usually, these mistakes result from companies failing to understand the differences between cloud-based and on-premises servers. **These are:**

OVERESTIMATING THE COMPANY'S NEEDS

The Cloud is scalable; therefore, there is no need to buy extra resources. **Companies spend too much on storage and computing power they will never use.** IT Staff should estimate what they really need to run their operations effectively.

ZOMBIE SERVERS

If one does not shut down unused cloud servers, for example, after testing, **the cost will go up drastically**. And the longer it takes for one to realize that money is being spent for no good reason, the more financial resources will be wasted. Studies show that **approximately 30% of all servers, both physical and virtual, are *zombie servers***. Unless the IT department can determine which of their cloud servers are, in fact, zombies, one should **consider hiring an external company that specializes in IT audits**. This one-time investment can save them a lot of trouble in the future.

GOING PAST THE FREE TRIAL EXPIRATION DATE

Willing to test and compare different cloud environments before making their final decision, **many companies sign up for a free cloud trial, yet forget to cancel before it expires.** The result? Regular invoices start to arrive – yet another unpleasant surprise.

COMPLEX TRANSFERS

Transferring data into a virtual machine is usually free, but **getting the data out will almost always cost you**. The price is the result of how much data is being transferred and where it is going. Plus, these costs vary depending on the region. **Moving data across services within the same region is usually less expensive**. At the end of the day, the costs of transferring data can come as a big surprise.

STORAGE TRANSACTIONS

Storage transactions are probably the hardest to estimate, mainly because **it is difficult to measure how much virtual space one is actually utilizing**, let alone predict future usage. However, difficult does not mean impossible, and **by doing so, companies can reduce operational costs even more.**

CHAPTER THREE

SLAS, OR WHAT THE CLOUD PROVIDER MEANS BY "99,999%"

Everyone knows what SLAs are, but when it comes to terms and conditions, **the truth becomes more complicated as it is revealed that there is a lot of money involved.** Though it may, at first glance, seem that it is about some background services, **what it really is about is data accessibility**, meaning how and when end-users can work with data.

Initially, you and your cloud provider come to an agreement on how long the service will be available. **Most vendors use server availability as their measure**. Even though this sounds pretty straightforward, **it is not.**

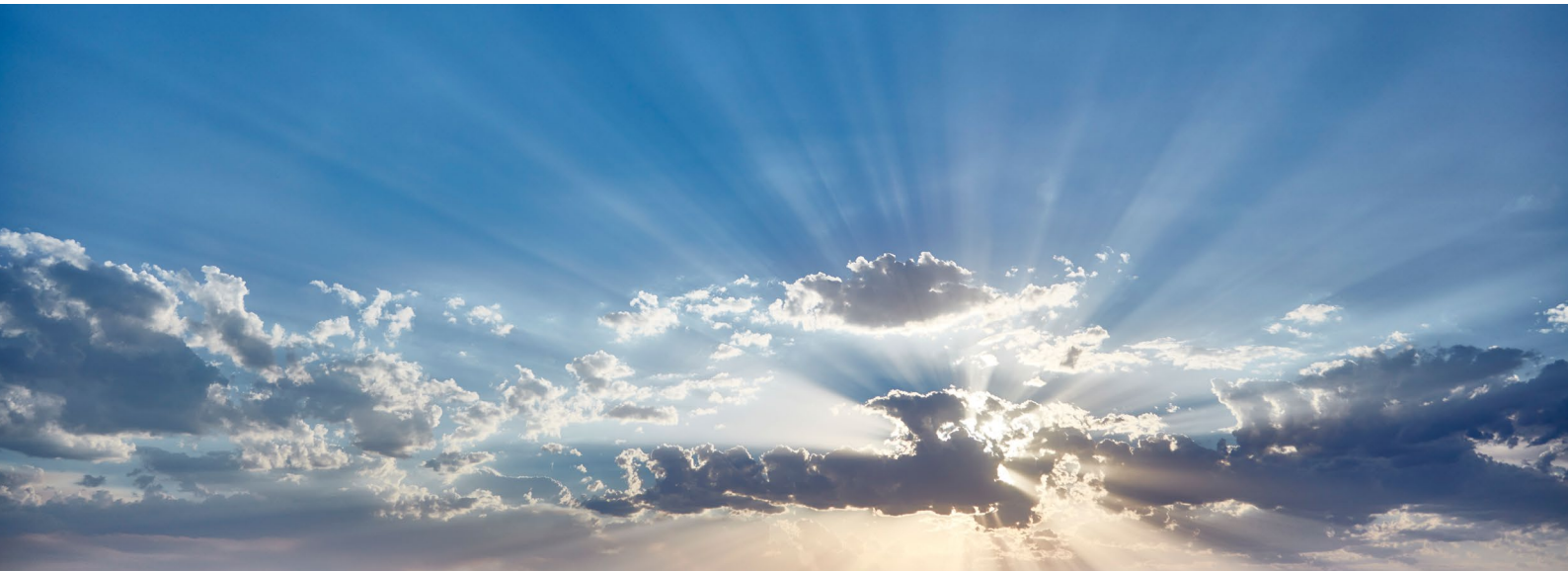
SLAs are usually calculated as a percentage. For example, 99,99% SLA can mean that there will be 4 minutes and 38 seconds of downtime per month. In other words, **it reflects the dependency between the service time and the planned (and unplanned) unavailability.**

And no matter which vendor one chooses, they should always **check the following four factors/KPIs:**

- **Guaranteed uptime** – the availability of a virtual machine per month (usually between 99,90% and 99,99%)
- **Measurement cycle** - the time of unavailability that should not be exceeded by the given vendor (otherwise, you can demand your credits). In other words, if a measurement cycle is five minutes, but there was four-minute downtime during which you did not have access to the service, the SLA was met.
- **Credits/reimbursement** - the amount of money that should be returned to you if a vendor does not meet the SLAs (the most prominent technology providers typically offer up to 30%)
- **Form of credits** - this can be different depending on the vendor. It is usually a discount for the next billing period or services.

The most popular formula for calculating annual uptime is:

*Uptime % = (minutes in the calendar year- downtime in minutes) / (minutes in the calendar year) * 100*



Remember - you have to prove your downtime. Make sure you can do that by, for example:

- observing Cloud Harmony statistics
- connecting an external measure tool (such as Pingdom)
- introducing an internal monitoring system
- collecting information from the servers

Let's not forget about additional services such as firewalls, backup, storage, and so on, as cloud providers may set different SLAs for each of them.

Again, availability is not only about data. **One should ask a vendor about data durability as many of them use the term "99.9999%" with no further explanations.** Another critical factor is whether a provider helps restore data in the event that an incident occurs, or whether that's a job for the in-house IT department. **This added-value factor can be critical for any company.**

When discussing a cloud project with a vendor, ask them:

- Who measures uptime and downtime (and how)?
- In what form can you receive a refund?
- What is the measurement cycle?
- Is there access to historical data?
- Will they be able to explain previous downtime?
- When are the *"service breaks"*?

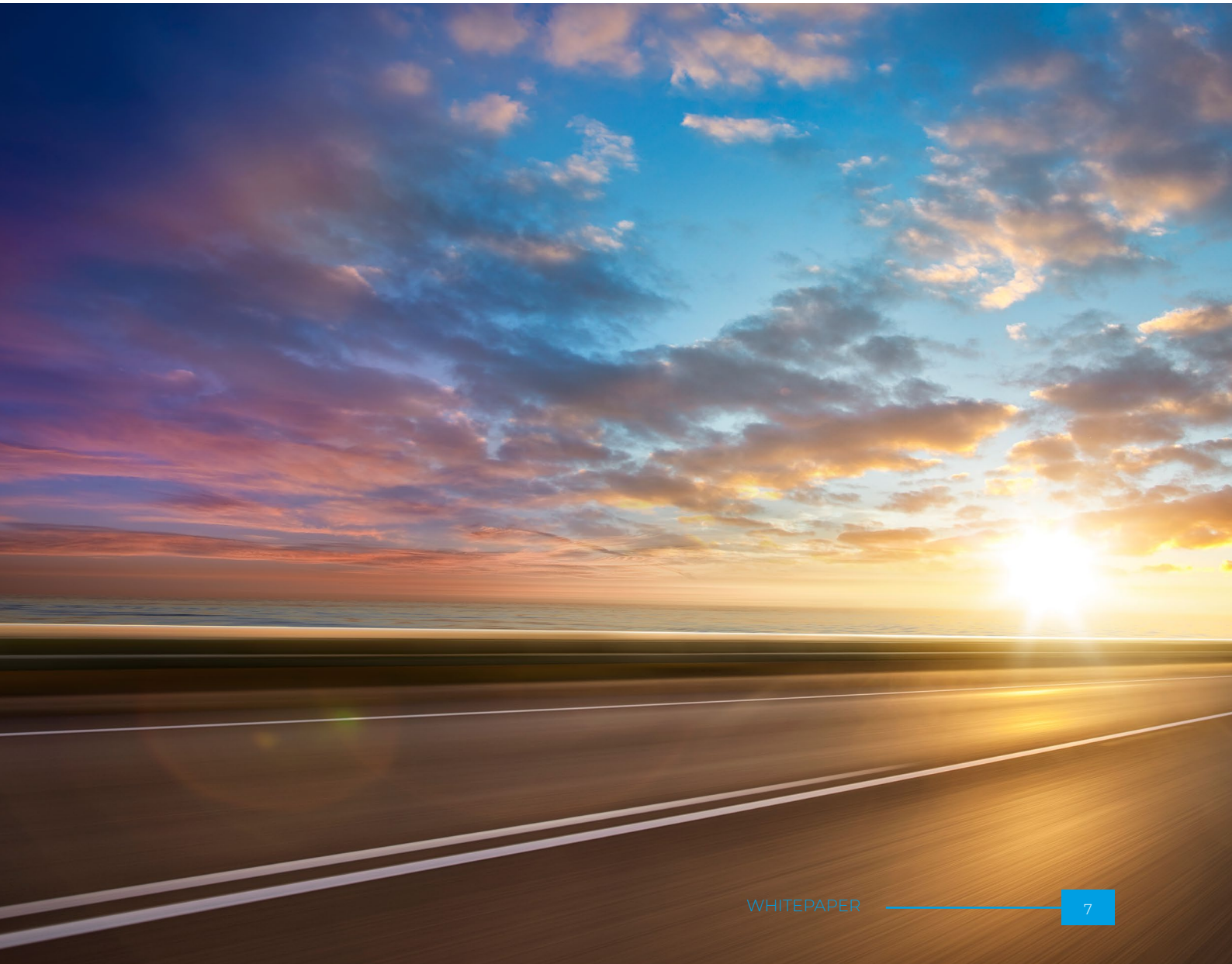
CHAPTER FOUR

BETTER, FASTER, EASIER - THE CONTAINERS

As innovative and cost-effective as it is, **the Cloud can only show its real value and advantages in proper conditions**. All of its benefits will be achievable, but only if one's application is **created for the cloud, explicitly using the tools offered by the cloud vendor**. One cannot merely transfer an old application into a cloud environment and then easily improve business efficiency and reduce operational costs.

The Cloud can help anyone gain a competitive advantage, but only if it is used properly.

Cloud containers are suitable for packing and launching applications. Thus, in a production environment, one needs to manage those containers in which applications are running and **make sure that they will not be interrupted**. For example, if one of the containers stops working, the other one must launch. **Wouldn't it be easier if the system could do it?**



CHAPTER FIVE

HOW APPLICATIONS BEHAVE IN THE CLOUD ENVIRONMENT

Yes, one may have an application that has been working well for many years, with no significant issues or negative feedback. That does not mean, however, that **competitors cannot come up with something better, lighter, faster, and instantly accessible from a browser**. There's only one way to keep up with the Joneses – one's application must be transferred to the cloud. Unfortunately, **most traditional applications must be rewritten as cloud-native from scratch.**

The most important part is to know precisely **what a cloud-native application should be.**

A cloud-native application offers **on-demand computing power along with data and application services for developers.** And these days, there is a need for a platform for building and operating cloud-native apps and services that drive **continuous delivery, DevOps, microservices, and containers.**

Continuous delivery is based on the agile approach. It focuses on **constantly delivering small changes to the software through automation.** Delivery is more frequent and less risky. Plus, a vendor can get feedback much faster, and **introduce more changes where needed.**

Why is it essential to have cloud-native applications? Because they can help one respond to the challenges of today and tomorrow. Unlike traditional apps, cloud-native ones are:

- ***Predictable*** *- design based on predictable behavior; highly-automated container-driven infrastructure has a direct impact on the way software is written*
- ***Independent*** *- thanks to the microservices architecture, applications consist of small services operating independently, which can be upgraded, restarted and scaled (with no impact on any other service in the app)*
- ***Collaborative*** *- close cooperation between the development and operations teams makes application delivery fast and smooth*
- ***Scalable*** *- automated scalability eliminates potential downtime caused by human error*
- ***Easily recoverable*** *- in the event of an app or infrastructure failure, an orchestration dynamically manages the placement of containers across the cluster to enable restart*
- ***Of the right size*** *(capacity) – a cloud-native application allocates and reallocates resources based on the actual needs of the app*

None of the abovementioned advantages will be available if one does not start with a cloud-native app. **This requires time and resources, but it is necessary.** Otherwise, all attempts to make a business efficient and modern will be in vain. Let's put it this way – **one simply cannot upload an old app to a new IT environment and pretend it is a technological gamechanger.**

CHAPTER SIX

THE BENEFITS OF MANAGED CLOUD SERVICES

Those who want to **enjoy their cloud to the fullest should also consider putting managed cloud services to use.** Why? Because the cloud is a very dynamic environment that **needs to be overseen by well-trained engineers.** Their many years of education, continuous self-development, training and professional certification are highly valuable. **Therefore, it comes at an additional cost.** But, as the saying goes – all good things come with a price.

The benefits are:

- **Reduced IT costs** - unlike on-premises models, you pay only for what you have used
- **Agility and versatility of your business** - your IT departments can focus on providing value to the company instead of fixing IT issues
- **24/7 operability** - thanks to the cloud, your company can operate in different time zones; thus, it's no longer limited by local office hours as all resources are easily accessible from any location
- **Advanced network security** - physical security threats are no longer your concern - all security tools (such as VLANs and firewalls) can be put in place for any set of cloud servers and create a highly secure and dedicated network environment
- **Centralized network** - users can access centralized data within the same network including virtual services
- **Automatic upgrades** - a cloud service provider is responsible for upgrades, maintenance and all other aspects of managing cloud servers
- **Disaster management and data recuperation** - Thanks to managed cloud services, you can be sure that your data are well-secured. The cloud offers you minimal downtime and high availability (with failover between hosts and resource balancing controlled at the virtualization level), so, even in the event of failure, your business will recover quickly.
- **Better infrastructure performance and reliability** - a managed services provider will monitor and scan the network 24/7 to ensure high availability

Bear in mind that basic cloud hosting is not managed, and you may not get regular backup and comprehensive monitoring. If you need those, you will have to pay much more than you previously expected.

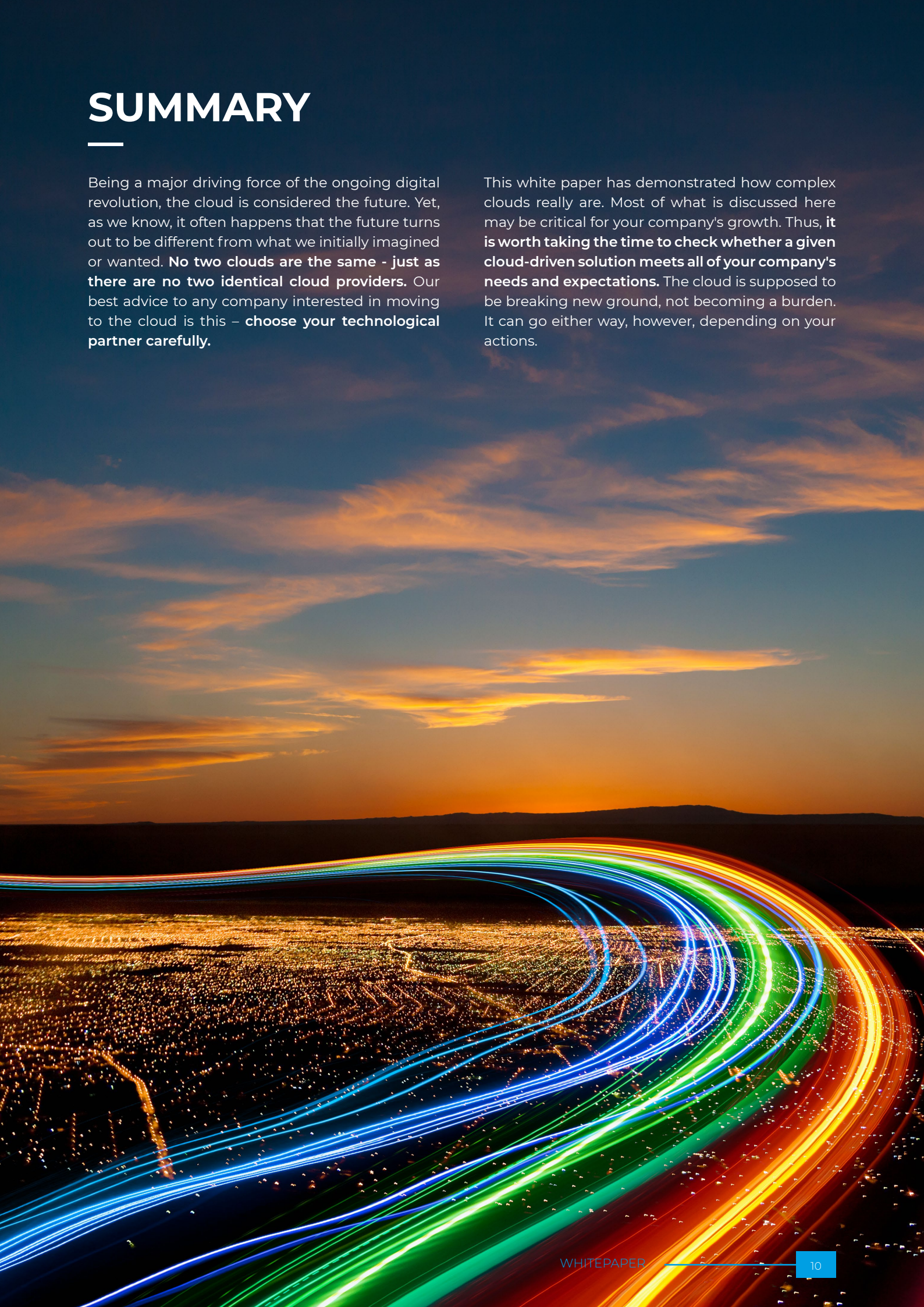
Cost transparency also can be tricky at times. Usually, the pricing for cloud hosting starts with low amounts, but **when your demands increase, the provider adds a few more items to your invoice**. Also, do not assume that 24/7 support is a global standard. It is not. Thus, you need to **check what the support plans are and how they are organized** (Helpdesk? Chat?).

Though the cloud provides instant access to data from any location, there is one more important aspect to which you should pay close attention, and that is **legal compliance**. As a result, **those cloud service providers who own data centers** where one's company operates may have the upper hand here. It does not mean, however, that the cloud cannot function efficiently when it is powered by a data center somewhere far from home. It can. But it is worth discussing the details with one's technology provider.

SUMMARY

Being a major driving force of the ongoing digital revolution, the cloud is considered the future. Yet, as we know, it often happens that the future turns out to be different from what we initially imagined or wanted. **No two clouds are the same - just as there are no two identical cloud providers.** Our best advice to any company interested in moving to the cloud is this – **choose your technological partner carefully.**

This white paper has demonstrated how complex clouds really are. Most of what is discussed here may be critical for your company's growth. Thus, **it is worth taking the time to check whether a given cloud-driven solution meets all of your company's needs and expectations.** The cloud is supposed to be breaking new ground, not becoming a burden. It can go either way, however, depending on your actions.



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