# Telekom Cloud ☁

# What is „cloud"?

A modern way of getting all the necessary IT resources. You just rent them, based on the actual needs of your business.

You access all these resources – like computing power of virtual machines, storage capacity, databases or apps – remotely, using network connections.

You can flexibly scale these resources up or down, based on your actual demand.

All these resources can be created, managed or deleted in self-service mode, using web-portals or management apps.

# Discover the benefits of cloud

**Flexibility and scalability.** Use as much (or as little) resources as you actually need, and adjust them in real-time.

**Agility.** Get shorter time-to-market, faster delivery of new products or services, and increase your productivity.

**Security.** Cloud-based solutions meet high security standards. Banks, government entities (or us at Telekom) trust them with our own business.

**Strategic trend.** Cloud is getting more and more attention among companies of all sizes – from small to huge corporations.

**Cost reduction.** No need to buy expensive servers and place them into datacenters. Just rent the capacity you need – for as long as you need it.

**Focus on your growth.** We will handle your servers or operating systems. You can focus on your business.

# 3 main models of cloud services

## Infrastructure-as-a-Service

- Instead of real servers placed on-premise or in hosted datacenters, you use virtual machines.

- Just rent the required computing power (CPU, RAM) and storage capacity.

- And pay just for the computing resources that you use.

## Platform-as-a-Service

- Ready-made platforms, databases, development environments (like LAMP) or cloud-based storage solutions.

- Users need to install and manage neither operating systems nor apps.

## Software-as-a-Service

- Applications, like Office 365, Exchange Online, Wordpress or Salesforce.

- Users can start using the apps almost instantly after their purchase.

# Location and ownership of cloud

## Public cloud

- Resources are shared between many customers. For example, one physical server is, using a virtualisation platform, made into several virtual instances, each of them for a different end user.

- All the resources, like virtual machines, storage or databases, are fully separated on the logical level.

- Examples include Telekom Cloud Server, Amazon Web Services, Google Cloud, Microsoft Azure.

## Private cloud

- Is based on an own, dedicated infrastructure, not shared with other users.

- It can come in several forms – from classic servers in either an own or in a hosted datacenter, up to a pool of resources or instances from a public-cloud provider, dedicated just for a single customer.

## Hybrid cloud

- Combines both public and private models.

- Business-critical apps, sensitive data or legacy applications are placed into own datacenter or use private, dedicated resources.

- At the same time, selected apps are running in public clouds, using all their benefits, incl. almost infinite scalability and cost-effective pay-as-you-go model.

# Cloud services of Slovak Telekom

## Telekom Cloud Server

Infrastructure-as-a-Service: virtual machines with required CPU, RAM, disk space.

## Data centers

Hosting of your servers and other equipment in up-to-date Slovak datacenters.

## Data services and VPN

Fast, reliable, low-latency L2 and L3 data connections.

## Telekom Cloud Storage

High-performance solution for storing all your data in Slovak datacenters.

## Network Protector Managed Firewall

Protection from DDoS attacks and other internet-based threats.

## Software-as-a-Service

Office 365 and other applications, incl. their initial setup, administration and other professional services.

# Why should you use Telekom Cloud Server?

Cost-effective alternative to traditional servers

Flexible computing power (CPU, RAM) and disk space

Operating systems: Windows Server, Linux or an own image

Pay-as-you-go pricing based on consumed resources only

Full scalability of all resources based on current needs

Computing resources and data are in data centers in Slovakia

Self-care management of virtual machines

Unlimited data volume for both upload and download

Professional SLA and many additional services

# Scaling of resources

## Traditional model

Usually, capacity requirements are created and hardware is purchased based on predicted peak usage.

When the actual workload is low, part of the purchased resources are idle or underutilised.

Purchased capacity of servers

Required capacity
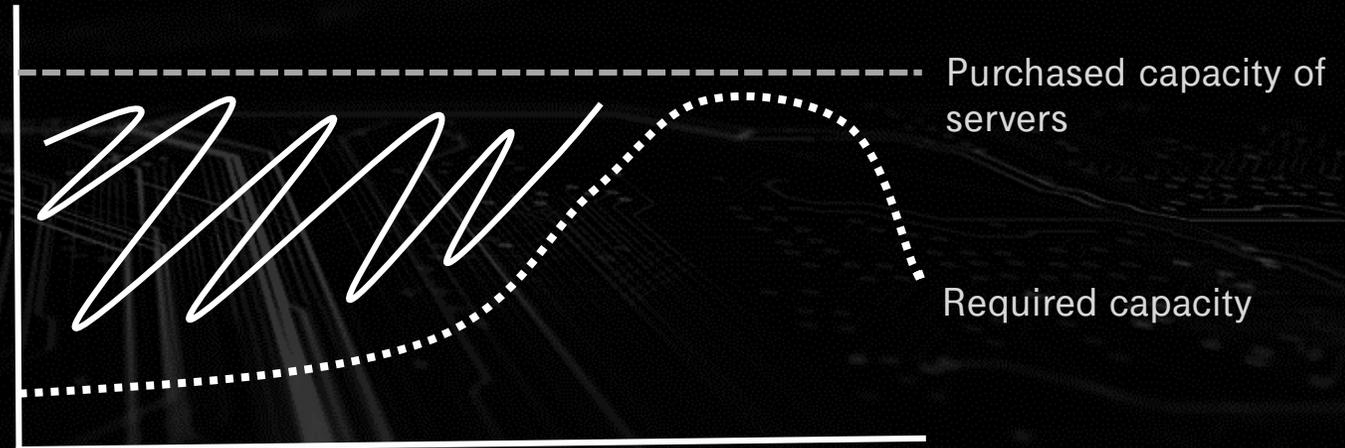
## Virtual servers

CPU, RAM or disk space can be flexibly adjusted, using self-care portal.

During peak usage, you just increase the available capacity. When the usage drops, you decrease the capacity, so that you do not pay for unused resources.

Purchased capacity of virtual machines

Required capacity

Minimal monthly fee
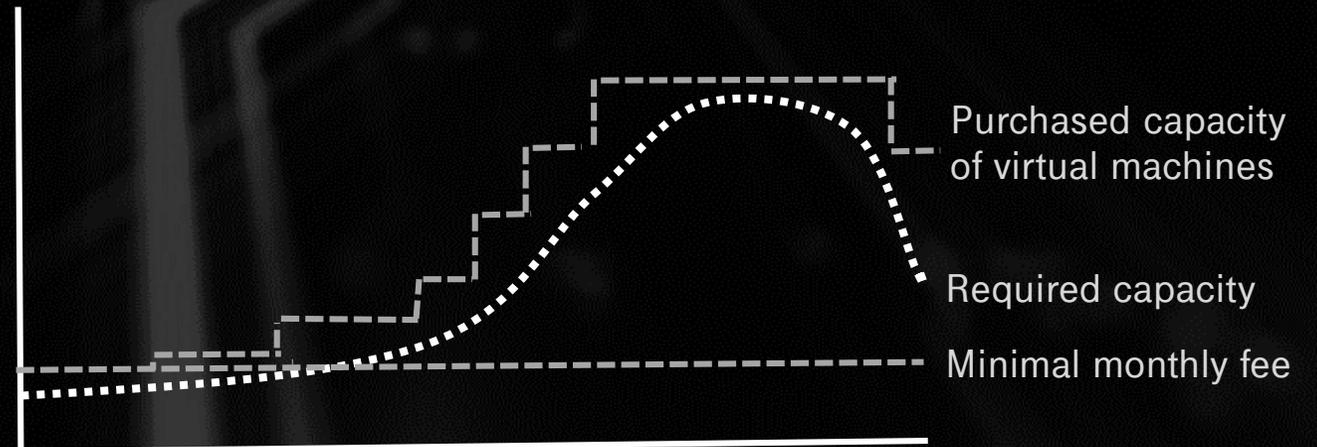
# TCO and ROI in case of virtual machines

## Traditional model: high upfront investment

- Hardware needs to be purchased: servers, storage, networking components (firewall, load balancer, VPN).

- Hardware needs to be installed.

- Hardware needs to be constantly monitored and serviced.

- Location for the physical hardware needs to be managed (datacenter, either on-premise or hosted, electricity, cooling, physical security, etc.).

- Licenses need to be purchased for operating system, databases, apps,..

- In case the capacity is lacking, additional hardware and / or software licenses need to be purchased. In case the workload is low, the resources are already purchased and available, but underutilised).

## Virtual infrastructure: OPEX only

- No hardware needs to be purchased. Required resources, like CPU, RAM or disk space, are rented only, based on the actual demand.

- No hardware installation is necessary.

- The underlying hardware is located in 2 Telekom data centers in Bratislava. Both the hardware and all the necessary support systems are managed by Telekom as the cloud provider.

- Licenses for operating system or databases are provided on a monthly basis, no need to purchase them upfront.

- Computing resources (CPU, RAM) or storage are fully flexible and can be scaled both up and down, based on the actual workload. New resources are available immediately, once the virtual machine is restarted.

# Our cloud is a result of cooperation with partners

**Virtualisation** vmware®

**Network infrastructure** CISCO  FORTINET

**Storage** HITACHI Inspire the Next

**Data centers and connectivity** T · ·

**Blade servers** IBM  hp

**Self-service and orchestration** cloudstack

# Telekom Cloud Server commercial conditions

**Minimum monthly fee**

Contractually agreed minimal fee for selected services. Based on this, special discounts or other conditions might apply.

Following resources are included into the monthly fee: CPU, RAM, disk (PRO+ / PRO / Standard), Snapshot, Template, ISO, Windows operating system, VM Ware licenses.

**Real usage**

Real usage of CPU, RAM, disk, (PRO+ / PRO / Standard), Snapshot, Template, ISO, and VM Ware licenses are billed on an hourly basis.

In case the total real usage in a given month is lower, compared to minimum monthly fee, the minimum monthly fee applies.

| Minimum monthly fee | Real usage | Billed amount |
|---|---|---|
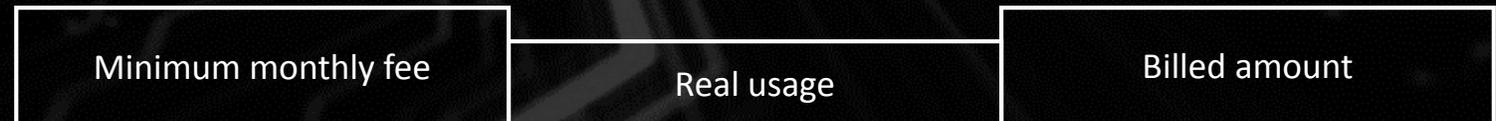
In case the total real usage in a given month is higher, compared to minimum monthly fee, the real usage fee applies.

| Minimum monthly fee | Real usage | Billed amount |
|---|---|---|
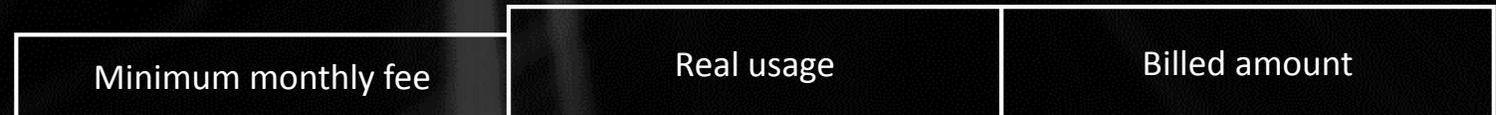
**Network connectivity**

Data volume, both uplink (into Telekom Cloud) and downlink (from Telekom Cloud) is unlimited.
Charges apply just for the connectivity service itself (in example, for data VPN, MPLS, BCN).

**Individual solutions**

These are available based on mutual agreement. They might include various implementation, support, management or service activities.

# Telekom Cloud Server disks and storage

Storage infrastructure is based on products by Hitachi. **HITACHI**
Inspire the Next

Virtual disks can be resized anytime, their capacity can be flexibly adjusted.

Virtual disks can be connected to any virtual server. However, they cannot be shared – each disk can, in a given time, be connected to one virtual machine only.

There are 3 storage tiers available.

## PRO+

- SSD (FMD)–based, for applications, requiring the highest disk performance.

- Recommended for OS-disks or for apps with the highest IOPS requirements, like relational databases.

## PRO

- SAS-based.

- Recommended for OS-disks or for high-performance apps.

## Standard

- SATA-based.

- This tier cannot be used for OS-disks.

- Remommended for non-critical apps, high-volume storage or backups.

# Data backup

## Snapshots of virtual disks

- These copies of virtual disks can be used for archiving, backup or as templates for creation of new virtual machines.

- Snapshots can be created manually or automatically (scheduled on hourly / daily / weekly / monthly basis).

- Snapshots are saved on the same storage hardware as the original virtual disk.

## Platform backup

- Telekom backups the Telekom Cloud Server platform and all the virtual servers.

- These backups are created regularly, so that they can be used for restore in a potential disaster-recovery scenario.
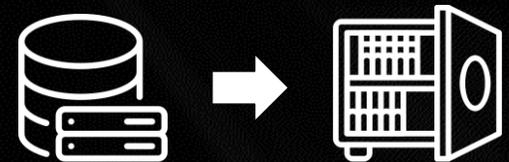
# High availability options

Virtual machines are running on infrastructure in two separate data centers

- In self-care portal, these two data centers are designated as DC1 and DC2.

- Users can select the data center during the provisioning of virtual machines.

High-availability solutions

- High-availability (active-active,  active – passive) is usually locally-redundant, in the same data center.

- When required, geo-redundant high-availability solution is possible, using two separate data-centers.

- While such a solution increases the theoretical avalability, it also results in higher resources allocation (and as such, higher cost).
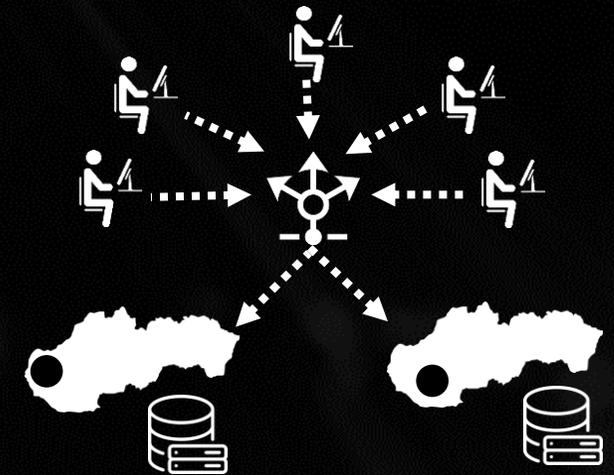
# Network connectivity

Both of the data centers, where Telekom Coud infrastructure is located, have redundant high-speed and high-capacity connections, to both international peers and locally.

Several connectivity options are available.

## Best-effort internet connection

- Shared 1Gb/s connection.
- Unlimited data volume, both uplink and downlink.
- Included as part of Telekom Cloud Server for no additional fee.

## Guaranteed data VPN (MPLS, BCN), IP-Sec tunnels, Direct Line

## Following features are included as part of Telekom Cloud Server for no additional fee:

- Load balancer,
- VPN concentrator,
- DHCP server, DNS server,
- NAT static / source, port forwarding,
- Firewall (plus Fortinet VDOM is available as an additional paid service).

# Self-care portal

**cloudstack**

Telekom Cloud Server portal is based on CloudStack platform.

- By default, primary domain (syntax: company@ID), plus primary user account, are provided.

- Additional user accounts can be created.

Self-service features include also:

- Create / adjust / delete virtual machines.

- Templates are available in the library, but all the parameters can also be individually adjusted.

- Power management of virtual machines (start, shutdown, reboot).

- Network management (firewall, load balancer, NAT / PAT,...).

- Web-based remote console to access the virtual machines.
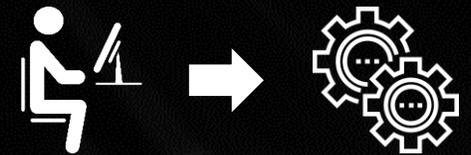
# Telekom Cloud Server service SLA

Following 4 SLA tiers are available

| | Basic | Advanced | Professional | Individual |
|---|---|---|---|---|
| Time interval | Mo-Fr 8:00 – 16:00 | Mo-Fr 8:00 – 20:00 | Nonstop | Individually |
| Guaranteed service availability | 99,9%* | 99,9%* | 99,9% | Individually |
| Max. response time | x | 90 min.* | 60 min. | Individually |
| Max. time-to-resolve of critical failures | x | 3 h.* | 2 h. | Individually |
| Pricing | Included | 7,5%** | 17,5%.** | Individually |

\*   Applies only during the respective Time interval.
\*\* Calculated as % from computing resources (CPU, RAM, disk, Snapshot, ISO image, Template) in a given month.

# Why should you use Telekom Cloud Storage?

SSD-based data storage with great price/value ratio

Storage capacity starting at 1TB, up to 10TB

An ideal solution in case you need to store critical data or backups

Accessed as a shared folder via SMB or NFS protocol

Storage capacity can be flexibly adjusted when you need it

All your data are stored in datacenters located in Slovakia

Proven security, incl. ISO 27018 and ISO 27001 certifications

Unlimited data volume for both upload and download

Professional SLA and non-stop support

# Introduction to Telekom Cloud Storage

Provides fast, reliable and secure SSD-based data storage.

Your data will be stored in datacenters in Slovakia.

Pricebook pricing 0,09999€ w/o VAT / 1GB / 1 month.
Or individual pricing conditions, based on your requirements.

Service availability 99,95%.

Access to your data using SMB / NFS protocols.

Network access:

- For customers with Telekom Cloud Server, connection using a VDOM from a dedicated VLAN.

- For customers without Telekom Cloud Server, connection using site-to-site VPN (IP-SEC VPN, shared VDOM) or using a dedicated VDOM (MPLS).

Thank you for your attention ☁