

Cloud Computing

Erste Schritte mit der Cloud
(Azure)

Download

- <https://github.com/DominikLandau/HSAN-2025>



Gliederung

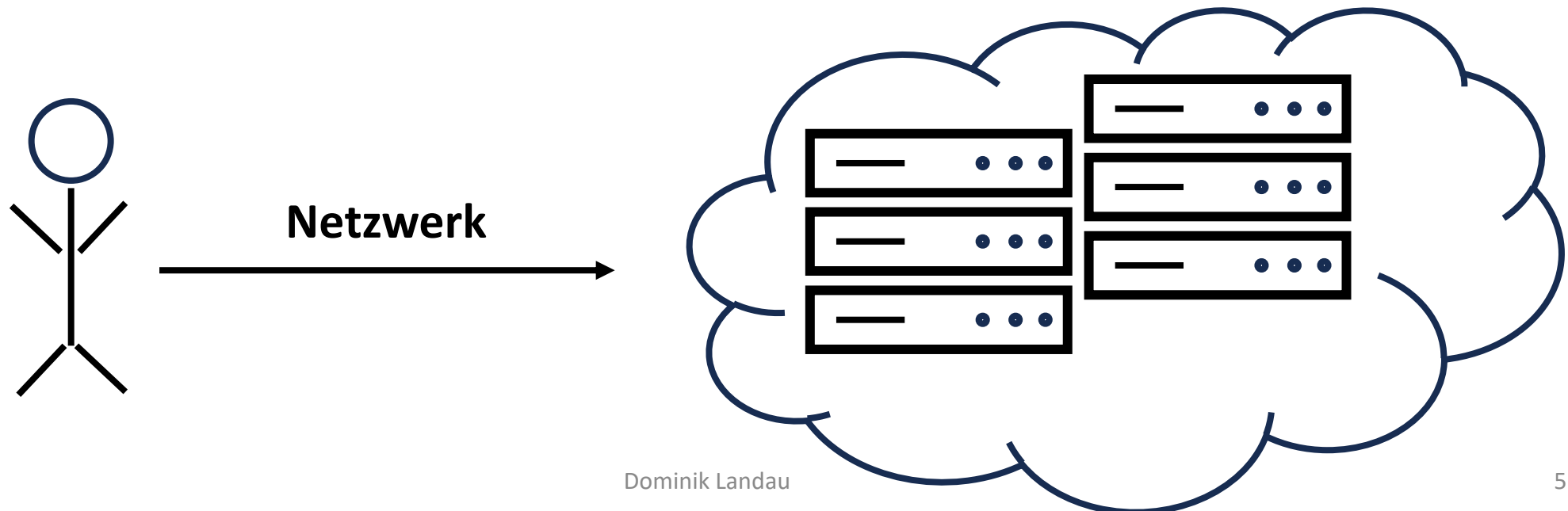
- Was ist Cloud Computing?
- Warum in die Cloud?
- Wen gibt es?
- Wie fange ich an?
- Worauf muss ich aufpassen?

Was ist Cloud Computing?

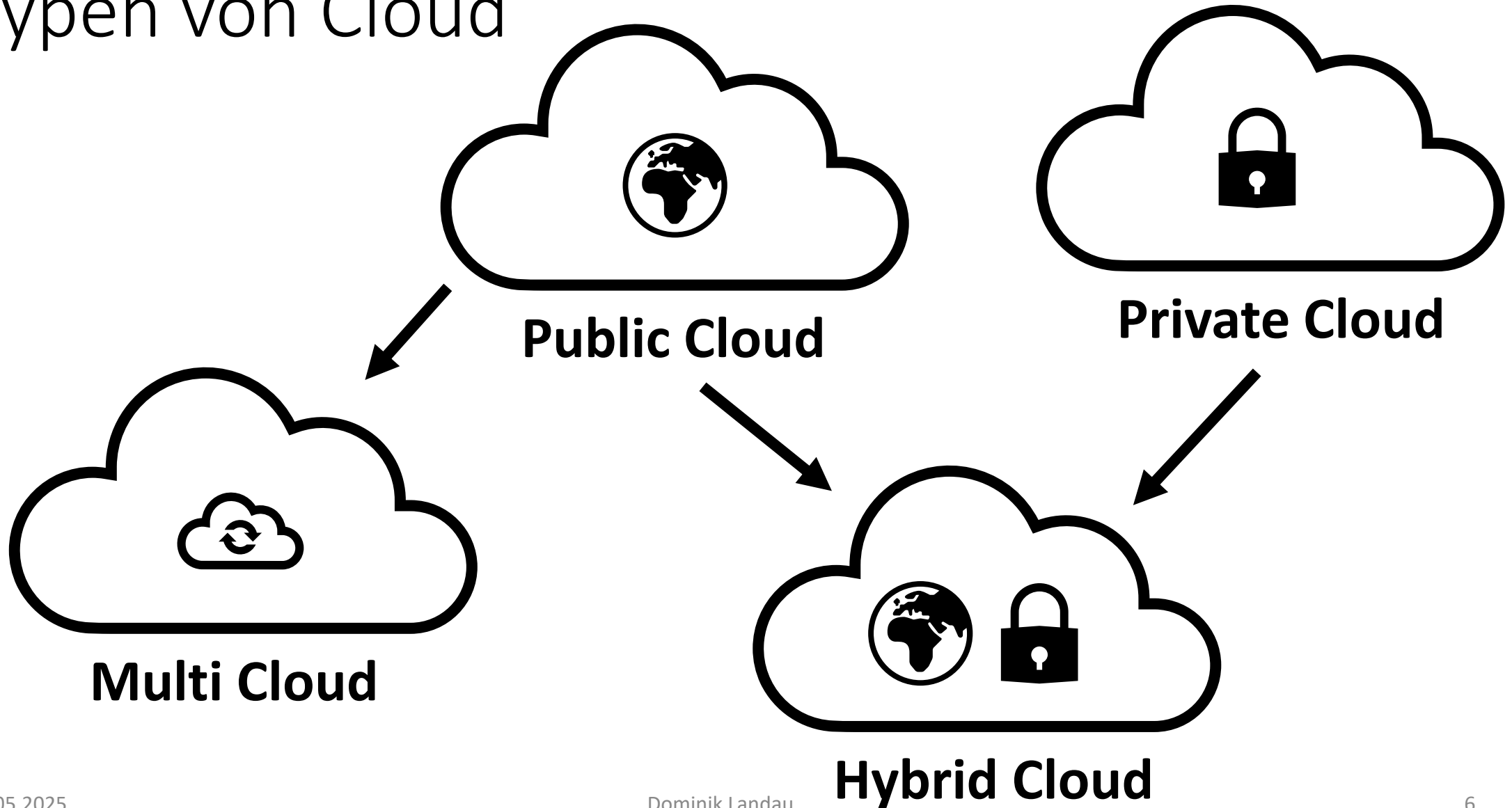
Cloud Computing

- ISO/IEC 22123-1 Section 3.1.1

paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand



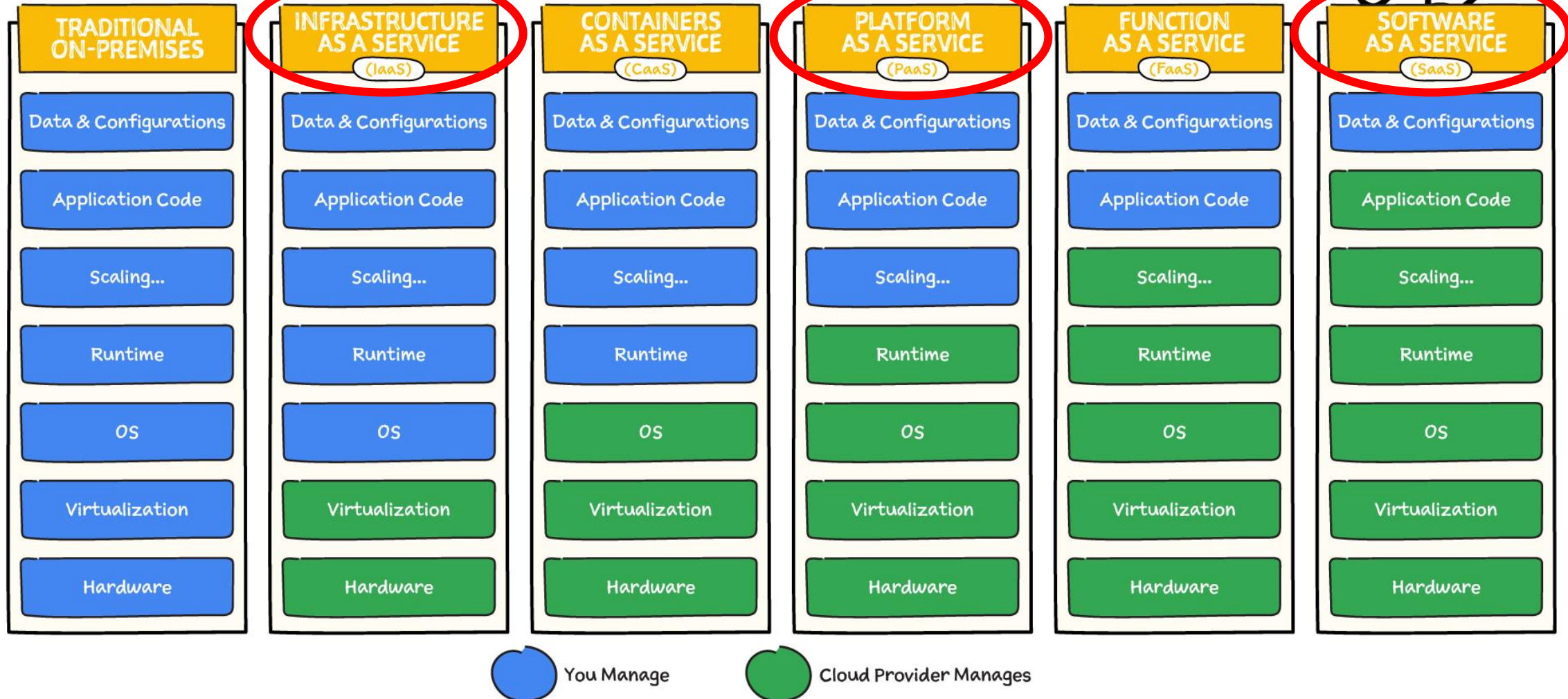
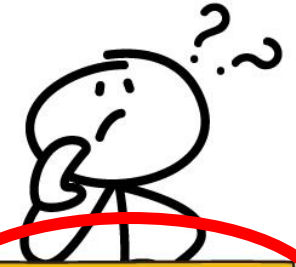
Typen von Cloud



#GCPsketchnote
@PVERGADIA
THECLOUDGIRL.DEV
08.11.2021

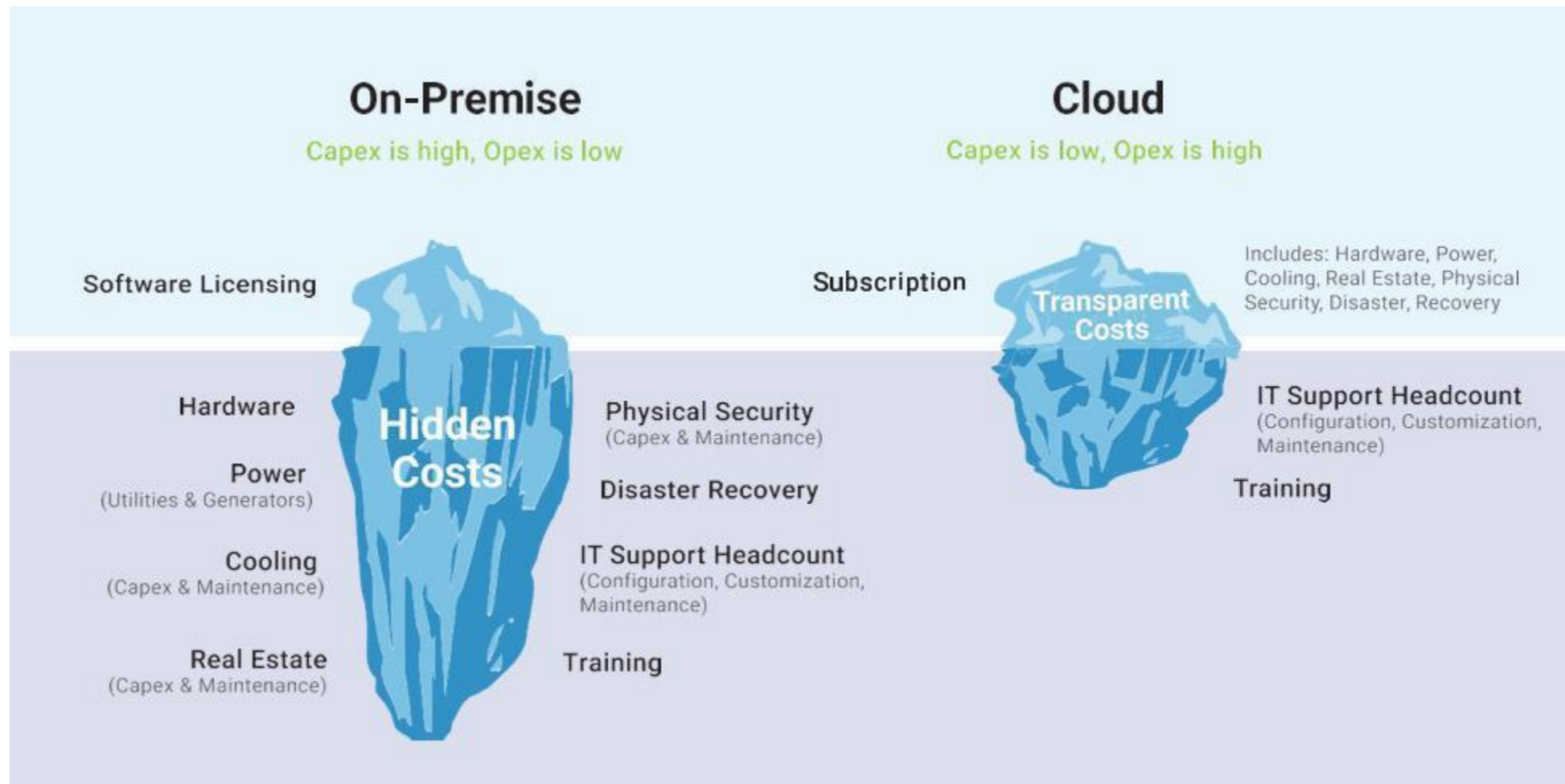


Wait... what is Cloud again?

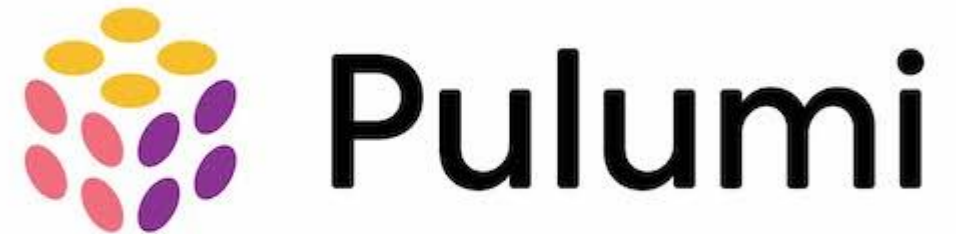


Warum in die Cloud?

CapEx vs OpEx



Skalierbarkeit und Automatisierung



Weitere Vorteile

- Einfaches testen / Proof of Concept
- Vorhersehbare Kosten
- Flexibilität
- Ressourcen (GPUs)

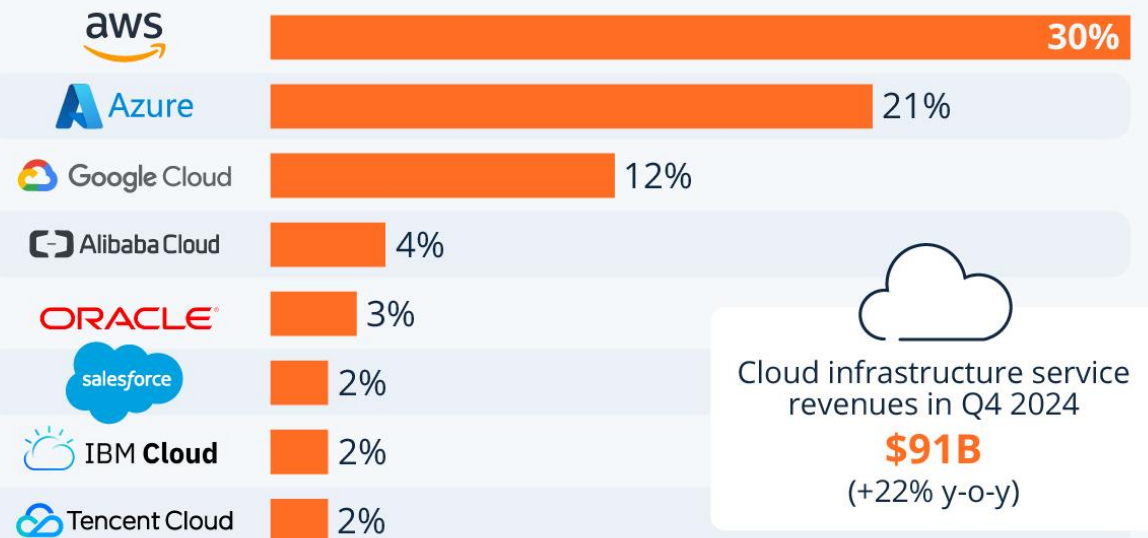
Wen gibt es?

Globaler Cloud Markt

- Hyperscalers
 - AWS
 - Azure
 - GCP
- Lokale
 - IONOS
 - Hetzner
 - STACKIT

Amazon and Microsoft Stay Ahead in Global Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q4 2024*



* Includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: Synergy Research Group

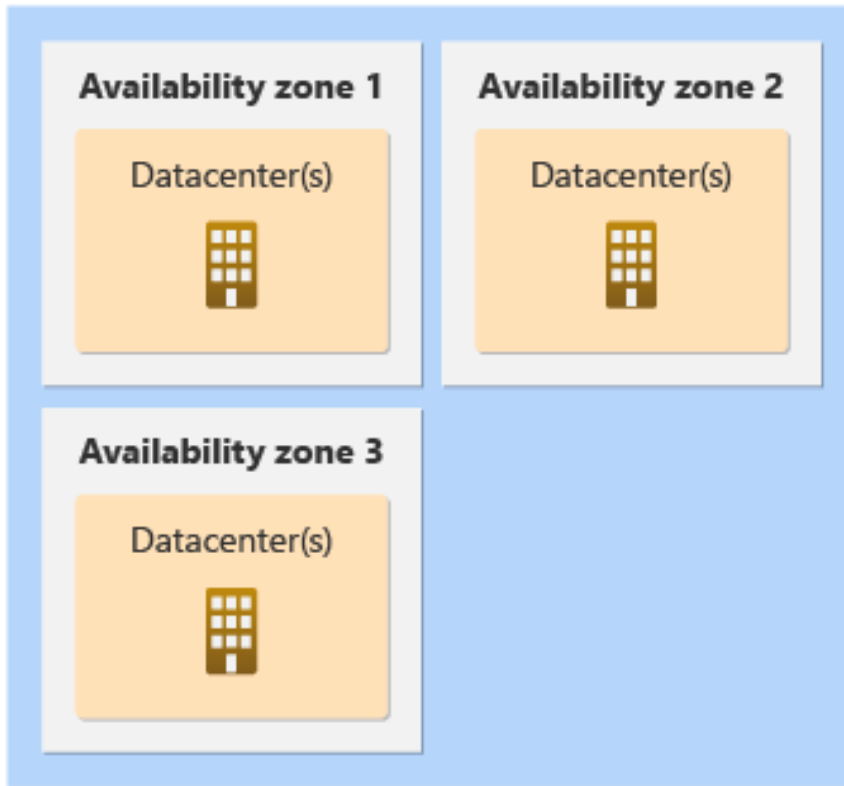


Azure

- Datacenter
 - <https://datacenters.microsoft.com/globe/explore/>
- Produktverfügbarkeit
 - <https://azure.microsoft.com/en-us/explore/global-infrastructure/products-by-region/table>
- Compliance
 - <https://learn.microsoft.com/en-us/azure/compliance/>
- Deutschland
 - Frankfurt (Germany West Central)
 - Berlin (Germany North) (Restricted)

Azure Geographie

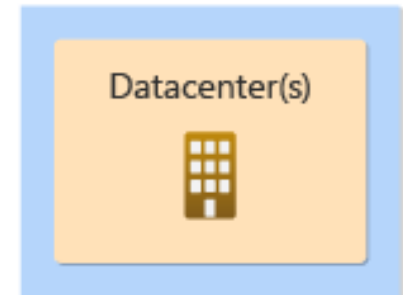
Azure region 1



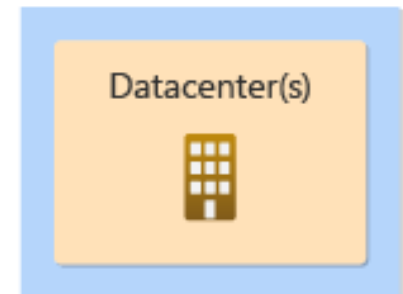
Azure region 2



Azure region 3



Azure region 4



Worauf muss ich aufpassen?

Kosten

- Pay-as-you-go
- Keine „harten“ Limits
 - -> Vorsicht vor Skalierung
 - -> DDOS kann teuer werden
- Test Accounts
 - GCP bietet über 90 Tage 300 Dollar
 - Azure bietet über 30 Tage 200 Dollar

Öffentlicher Zugang

- Angelegte Ressourcen sind oft öffentlich erreichbar

Home > Storage accounts >

Create a storage account

Basics Advanced Networking Data protection Encryption Tags Review + create

Network connectivity

You can connect to your storage account either publicly, via public IP addresses or service endpoints, or privately, using a private endpoint.

Network access *

☒ Enable public access from all networks

☐ Enable public access from selected virtual networks and IP addresses

☐ Disable public access and use private access

i Enabling public access from all networks might make this resource available publicly. Unless public access is required, we recommend using a more restricted access type. [Learn more](#)

Quotas

- Limitierter Zugriff auf Ressourcen

▼ Usage at low level (8)					
<input type="checkbox"/>	Standard BS Family vCPUs	Germany West Central	Visual Studio Enterprise Subscri	<div><div></div></div> 10%	2 of 20
<input type="checkbox"/>	Total Regional vCPUs	Germany West Central	Visual Studio Enterprise Subscri	<div><div></div></div> 10%	2 of 20
<input type="checkbox"/>	Standard BS Family vCPUs	West Europe	Visual Studio Enterprise Subscri	<div><div></div></div> 10%	2 of 20
<input type="checkbox"/>	Total Regional vCPUs	West Europe	Visual Studio Enterprise Subscri	<div><div></div></div> 10%	2 of 20

Deployment

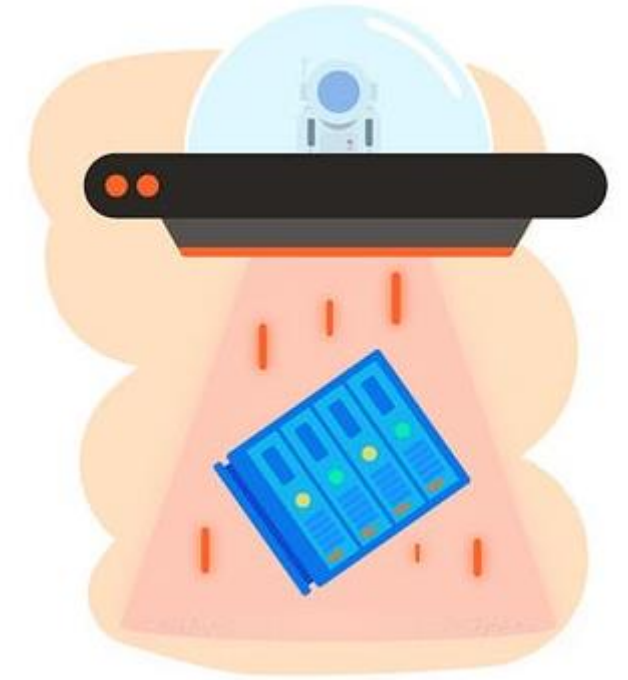
Lift and Shift

- Einfach umsetzbar
- Teuer



Cloud Native

- Kosteneffizient
- Vendor Lock In



Wie fange ich an?

Grundlagen lernen

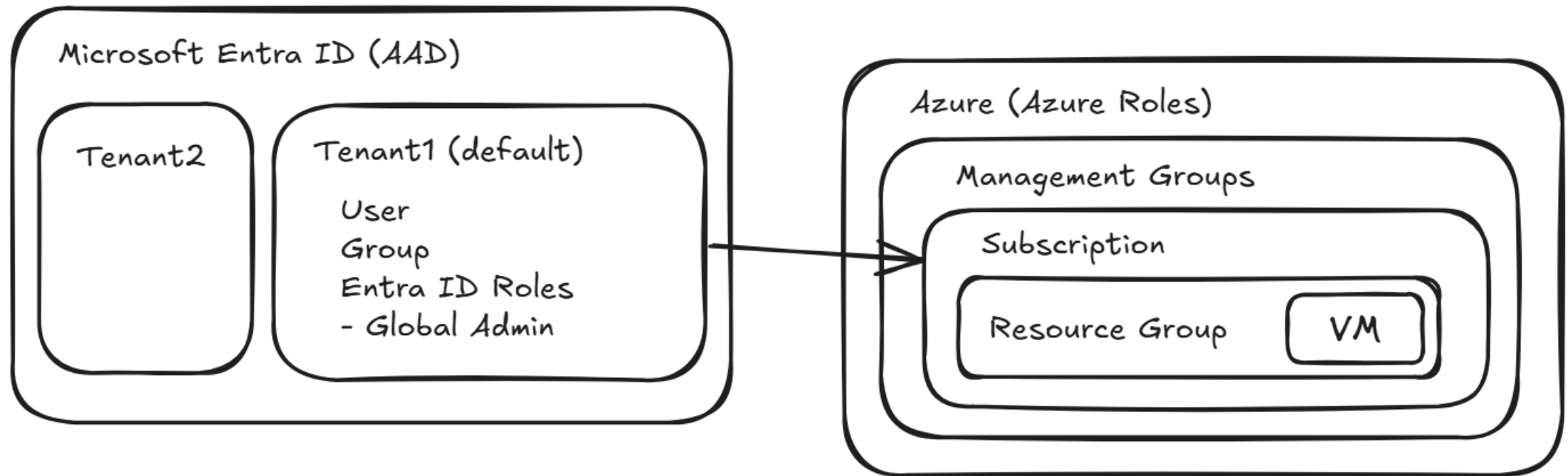
- learn.microsoft.com
 - AZ-900 (<https://learn.microsoft.com/en-us/training/courses/az-900t00>)
 - AZ-104 (<https://learn.microsoft.com/en-us/training/courses/az-104t00>)
- Youtube
 - John Savill's Technical Training
 - Azure Master Class
(<https://www.youtube.com/watch?v=afzzawldfFk&list=PLIVtbbG169nGccbp8VSpAozu3w9xSQJoY>)

The Azure Periodic Table

1-90 mg- management group	1-80 agw- application gateway	1-80 bas- bastion	1-80 nsgsr- nsg security rules	2-64 vnet- virtual network	2-60 ase- app service environment	1-80 disk- managed disk (data)	1-63 aks- container kubernetes	3-44 cosmos- cosmos db account	1-260 mlw- machine learning	2-64 pers- personalizer service	3-63 as- analysis services server	3-50 evgd- event grid	3-64 provs- iot device provisioning	1-64 vdpool- virtual desktop host pool	1-50 apim- api management	6-50 aa- automation account
1-90 sub- subscriptions	1-80 asg- app security group (asg)	5-64 fd- front door	1-80 nw- network watcher	1-80 snet- subnet	1-40 asp- app service plan	1-260 nft- notification hubs	5-50 cr- container registry	1-63 redis- cache for redis	2-64 srch- search service	2-64 bot- bot service	3-64 dbw- databricks workspace	3-64 egst- event grid subscription	1-64 pcert- provisioning services	1-64 vdag- virtual desktop app group	1-80 ia- integration account	1-260 appi- app insights
1-90 rg- resource group	1-260 cdnp- cdn profile	1-128 fdfp- front door firewall policy	2-64 pep- private endpoint	1-80 peer- virtual network peering	2-60 app- app service	6-50 nftns- notification hubs	1-63 ci- container instance	1-63 sql- sql server	2-64 oai- openai service	2-64 doci- document intelligence	3-63 asa- stream analytics	3-50 evgt- event grid topic	3-63 pbi- power bi embedded	1-64 vdws- virtual desktop workspace	1-43 logic- logic apps	1-260 ag- monitor action group
3-128 id- managed identity	1-50 cdne- cdn endpoint	1-80 lbi- load balancer (internal)	1-80 pip- public ip address	1-80 vwan- virtual wan	1-80 avail- availability set	1-80 snap- snapshot	4-23 sf- service fabric cluster	1-128 sqldb- sql database	2-64 spch- speech service	2-64 ma- metrics advisor service	4-22 dec- data explorer cluster	3-59 hadoop- hdinsight - hadoop cluster	3-63 pbiw- power bi workspace	5-50 appcs- app configuration	6-50 sbns- service bus namespace	6-50 pview- purview instances
1-64 set- policy initiative	1-80 erc- expressroute circuit	1-80 lbe- load balancer (external)	1-80 ippre- public ip prefix	1-80 vpng- vpn gateway	1-40 arcs- arc enabled server	2-60 stapp- static web app	4-23 sfmc- service fabric managed	1-63 mysqldb- mysql database	2-64 lang- language service	2-64 vi- video indexer service	1-260 dedb- data explorer cluster	3-59 hbase- hdinsight - hbase cluster	1-90 tsi- time series insights	3-63 sigr- signalr	1-260 sbq- service bus queue	90 bp- blueprint
1-64 def- policy definition	1-80 gc- expressroute connection	1-80 rule- load balancer rule	1-80 rf- route filter	1-80 vcn- vpn gateway connection	1-63 arck- arc enabled kubernetes	1-15 vmw- virtual machine windows	2-32 cae- container app environment	1-63 psqldb- postgresql database	2-64 tran- translator service	2-64 ir- immersive reader service	3-63 adf- data factory	3-59 kafka- hdinsight - kafka cluster	1-50 synw- synapse analytics	1-98 map- maps account	1-260 sbt- service bus topic	90 bpa- blueprint assignment
1-63 dnsz- dns zone	1-80 lgw- local network gateway	1-80 rt- route table	1-80 vst- vpn site	1-80 des- disk encryption set	1-64 vml- virtual machine linux	2-32 ca- container app	1-128 sqlstrdb- sql server stretch	2-64 vis- vision service	3-63 fab- microsoft fabric	3-24 dls- data lake store account	3-59 spark- hdinsight - spark cluster	1-60 syndp- synapse analytics sql	2-62 dms- database migration	3-24 kv- key vault		
1-63 pdnsz- private dns zone	1-80 ngw- nat gateway	1-80 se- service endpoint policy	1-80 vgw- virtual network gateway	2-60 func- function app	1-15 vmss- virtual machine scale set		1-63 sqlmi- sql managed instance	2-64 face- face service		3-24 dla- data lake analytics	3-59 storm- hdinsight - storm cluster	1-15 synsp- synapse analytics spark	2-57 migr- database migration	4-63 log- log analytics workspace		
1-80 afw- firewall	1-80 nic- network interface (nic)	1-63 traf- traffic manager profile	1-80 waf- web app firewall policy	1-80 gal- shared image gallery	1-64 vmss- virtual machine scale set linux		3-24 st- storage account	2-64 ad- anomaly detector		6-50 evhns- event hub namespace	3-59 mls- hdinsight - ml services	3-63 dt- digital twins instance	2-50 rsv- recovery services vault			
1-80 afwp- firewall policy	1-80 nsg- network security group	1-80 udr- user defined route (udr)	1-80 wafrg- waf policy rule group	1-80 osdisk- managed disk (os)	1-64 lt- load testing service		2-50 ssimp- storsimple	2-64 cs- content safety service		6-50 evh- event hub	3-50 iot- iot hub	3-24 ba- batch account				

- General
- Networking
- Compute & Web
- Containers
- Databases
- Storage
- AI & ML
- Analytics & IoT
- Virtual Desktop
- Dev Tools
- Integration
- Migration
- Management

Azure und Entra ID

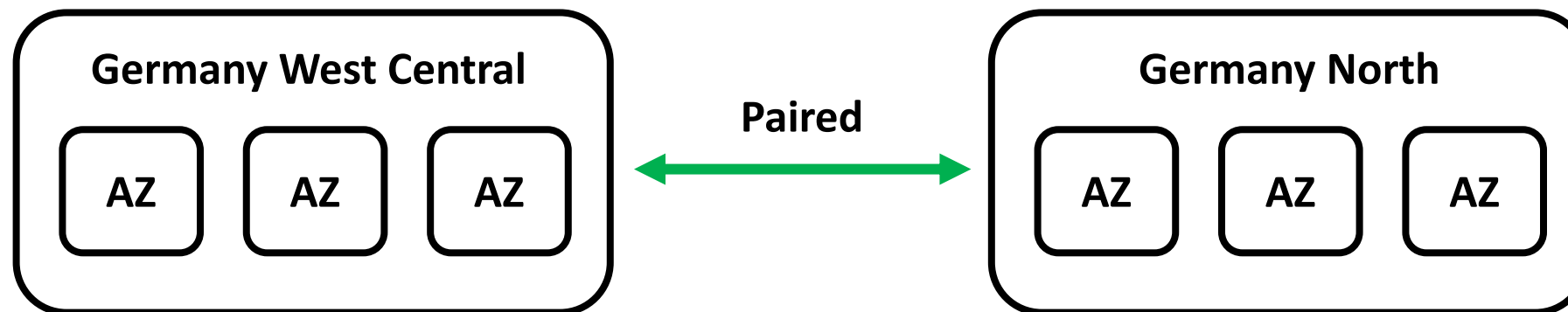


Azure Landing Zone

- Azure Architecture Center
 - <https://learn.microsoft.com/en-us/azure/architecture/icons/>
- Landing Zone Beispiel
 - <https://learn.microsoft.com/en-us/azure/cloud-adoption-framework/ready/landing-zone/>
- Bevor man mit Azure startet sollte man sich Gedanken, was umgesetzt werden soll

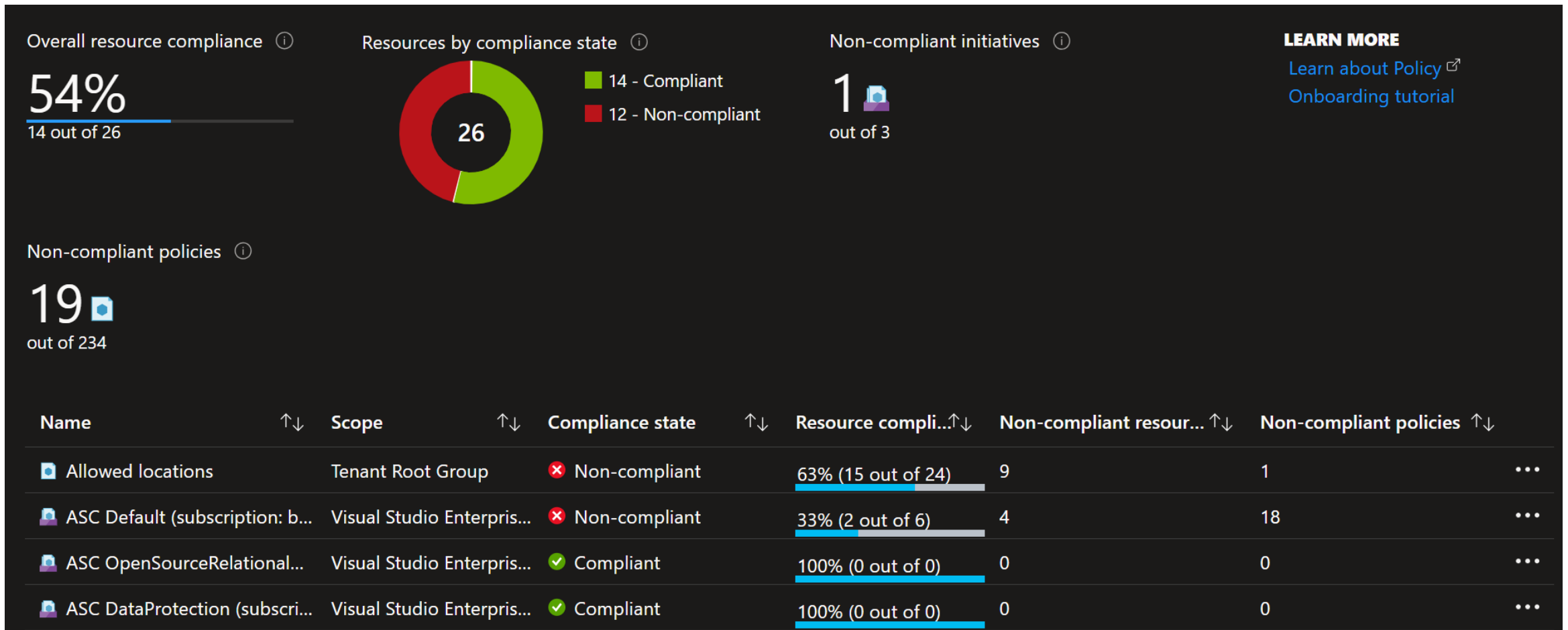
Regionen-Auswahl

- Es gibt immer zwei Regionen, die direkt verbunden sind
 - <https://learn.microsoft.com/en-us/azure/reliability/regions-list>
- Storage Account, Backup Vault, Key Vault
 - GRS, GZRS (Geo-Redundanz)



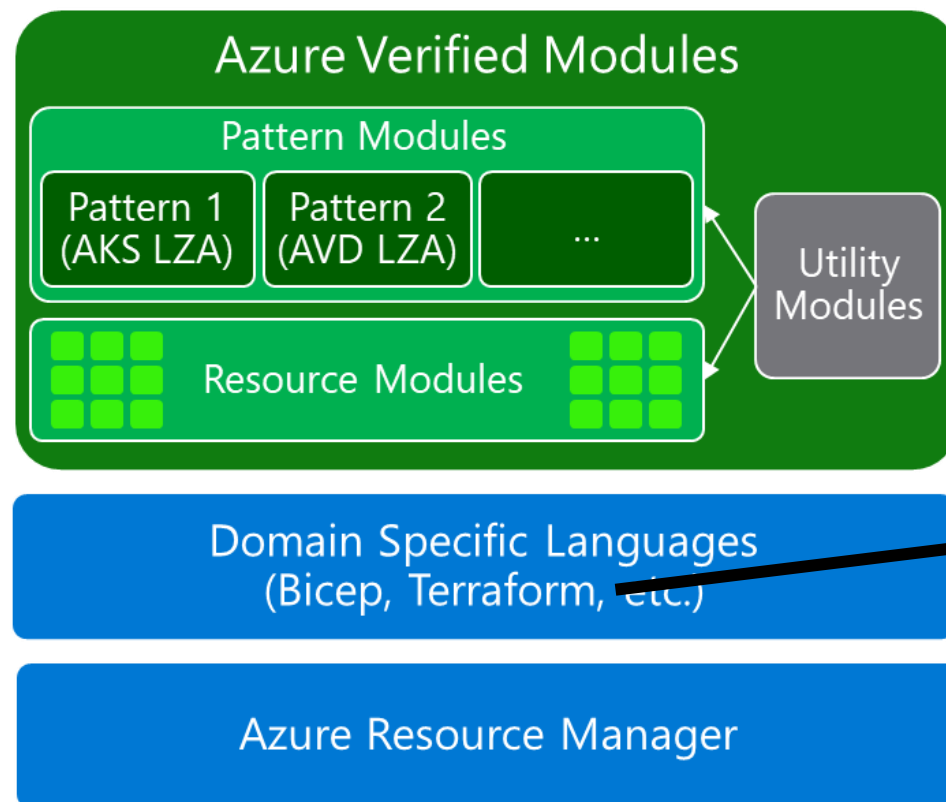
Leitlinien einbauen

- Azure Policies







Automatisierung

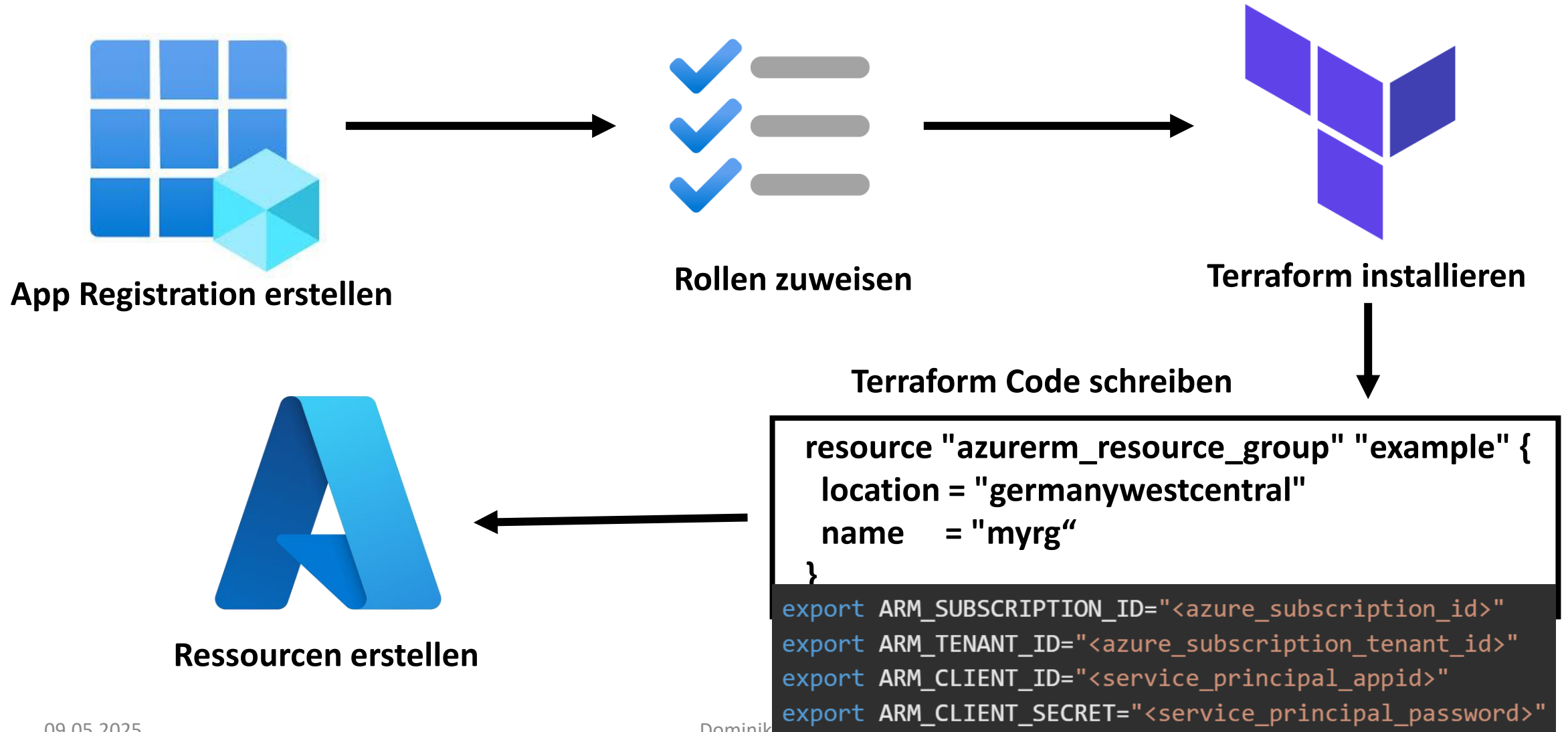
- Azure Verified Modules
 - <https://azure.github.io/Azure-Verified-Modules/>



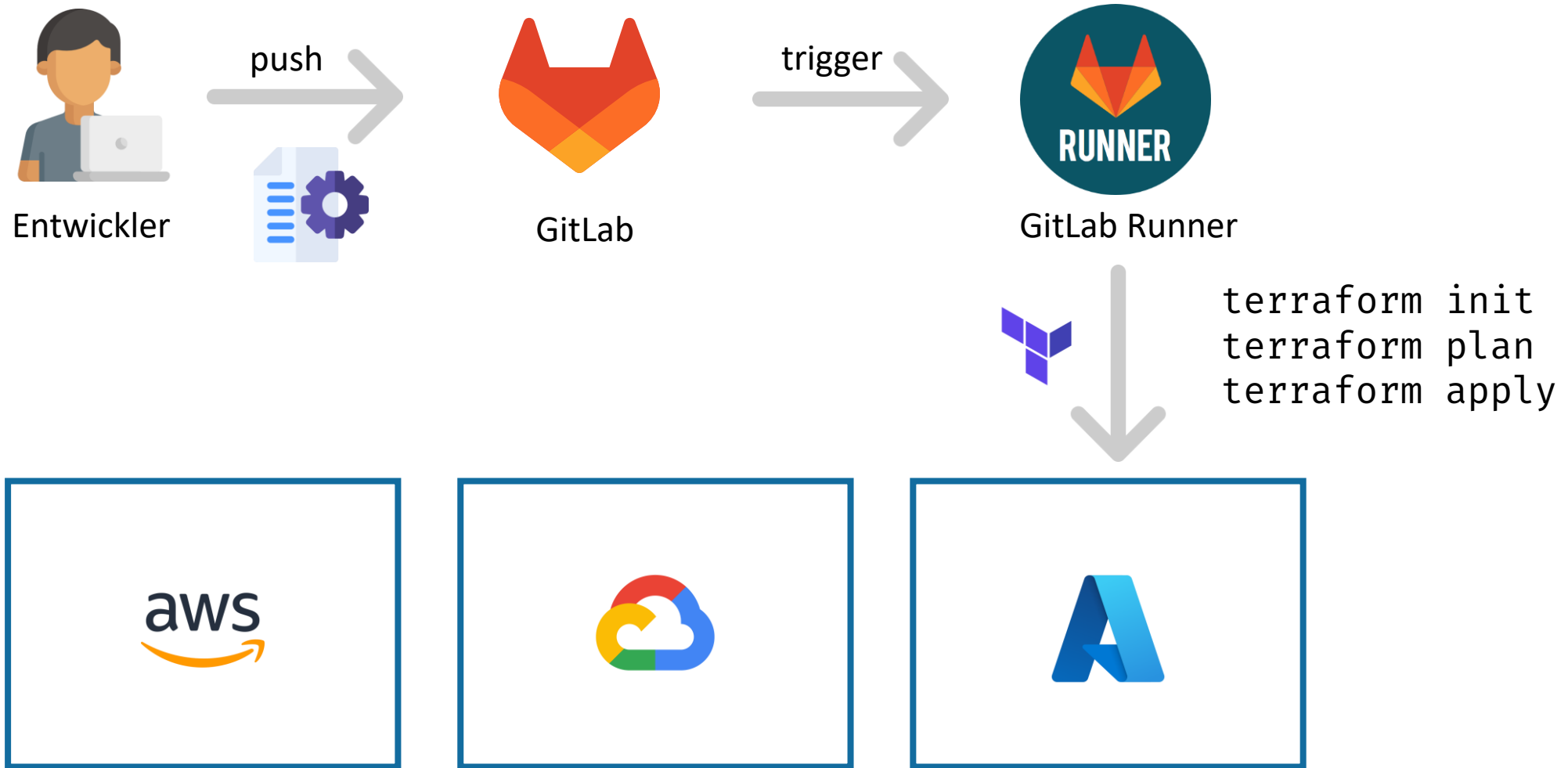
Published Modules - Module names, status and owners

No.	Module Name	Source Code	Display Name
01	avm-res-app-containerapp		Container App
02	avm-res-app-managedenvironment		App Managed Environment
03	avm-res-authorization-roleassignment		Role Assignment
04	avm-res-automation-automationaccount		Automation Account

Terraform und Azure



Terraform und GitLab



Fragen