Guten Morgen!

Microsoft Cloud Adoption Framework for Azure

CAF

Physik

NT 4.0

Red Dog

ARM Azure

Heidelberg

Thomas Jäkel

brainymotion

Lead Trainer Cloud Infrastructure

Microsoft Certified Trainer since 1999

FORTRAN

Dev Ops

github.com/www42/[illegible]

/az-900

9^{00} - 17^{00}

12^{30} - 13^{30}

Agenda

1) CAF 4 + 2

2) Landing Zones

3) ARM Template ← Bicep Lang

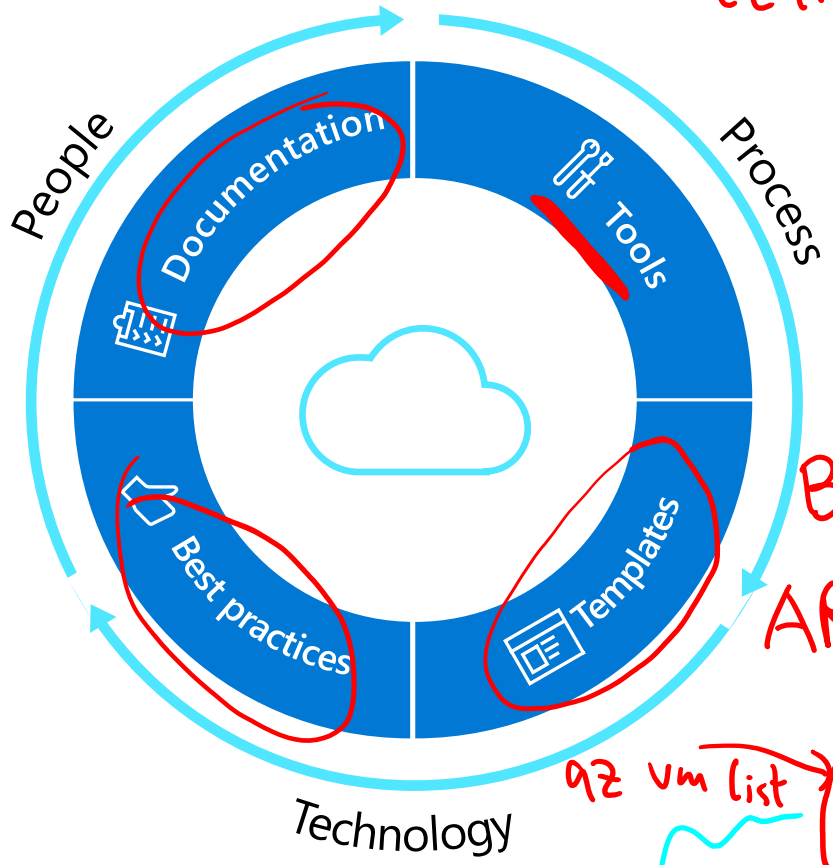
4) Sonstiges

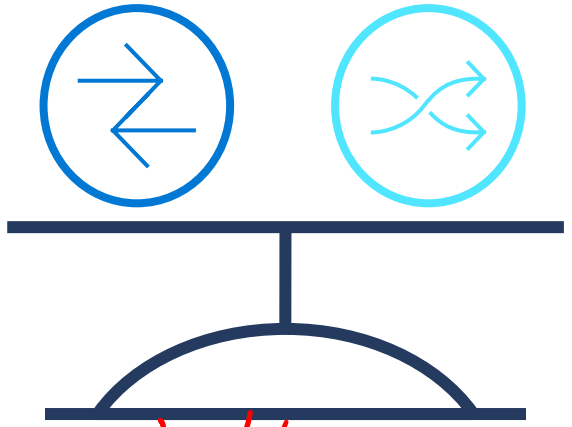
CAF

WAF

Microsoft Cloud Adoption Framework for Azure

learn.microsoft.com





Bicep Lang

ARM json

PowerShell

az vm list

ARM API

Azure Portal

Provider

Align **business, people and technology strategy** to achieve business goals with **actionable, efficient, and comprehensive** guidance to deliver fast results with control and stability.

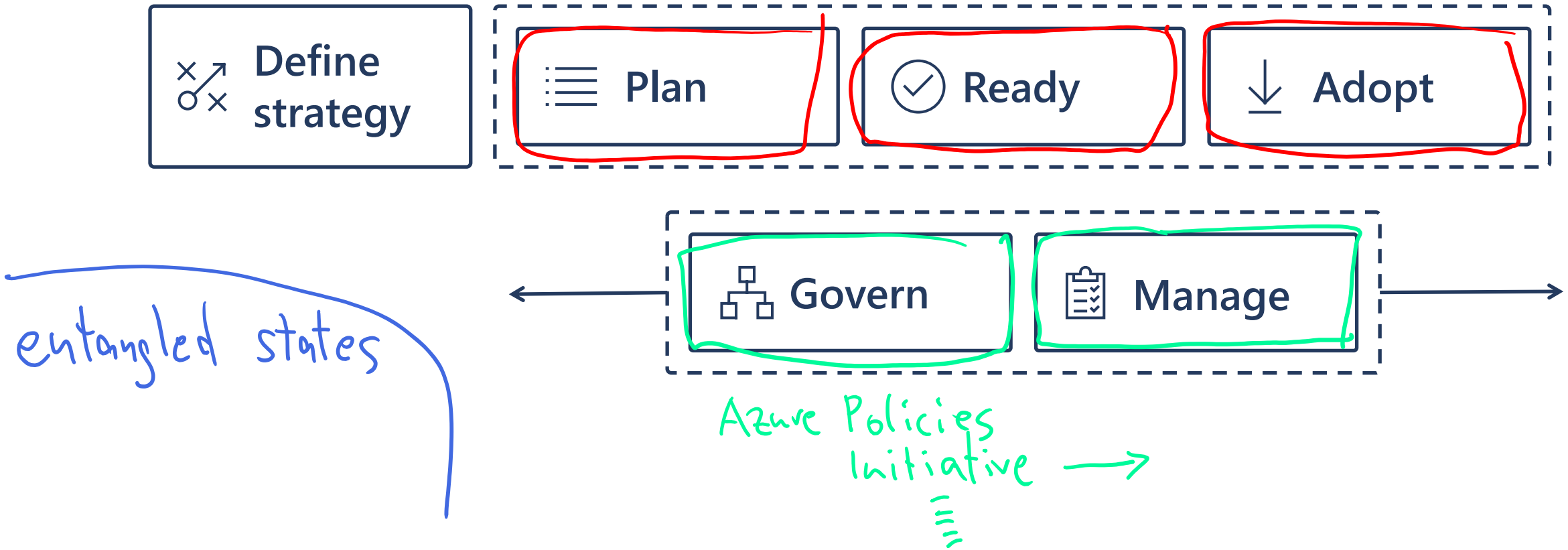
Building the framework

4 + 2

Modular approach, meeting the customer in their journey

Azure Migrate Project

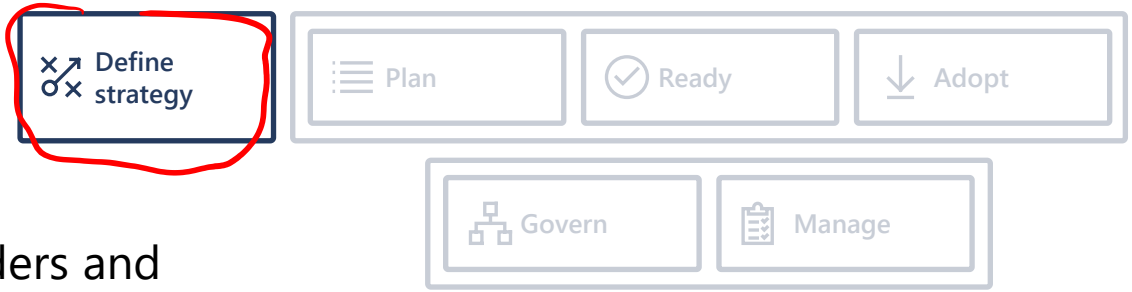
Lift & Shift



Define strategy

App DB .Net EXO

Azure



Documenting the cloud strategy will help business stakeholders and technicians understand the benefits the organization is pursuing by adopting the cloud.

IaaS PaaS SaaS

CapEx → OpEx

Motivations

- Executive mandate
- DC Exit
- Merger and acquisitions
- Cost savings
- Optimization
- Agility
- Tech capabilities
- Market demands
- Geo expansion
- Migration
- Innovation

Cloud first
Multi cloud

Business outcomes

- **Fiscal:** revenue, cost, profit
- **Agility:** timer to market, provisioning,
- **Reach:** global access, sovereignty
- **Customer engagement:** cycle time, from request to release
- **Performance:** SLAs, Downtime, operations, reliability

Region ≈ Location

Avail zones

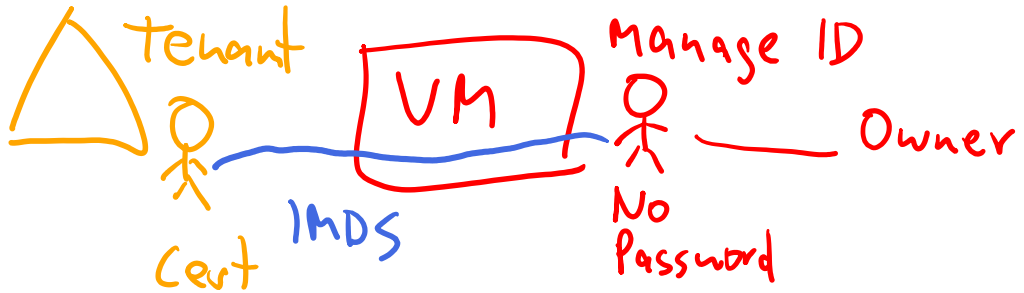
Business justification

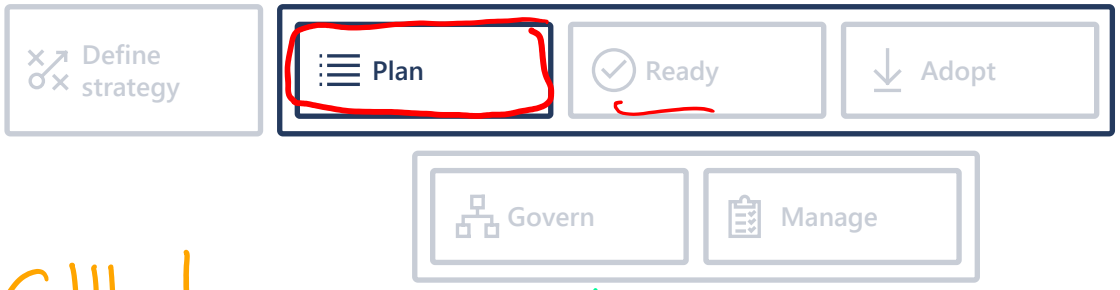
- **Business case:** the cloud is not always cheaper, mirroring is not cloud, servers drive cost analysis
- **Financial model:** Capex/Opex, ROI, gain, cost avoidance/reduction
- **Cloud accounting:** cost center, procurement, profit center, revenue generating, chargeback

First project

- **Business criteria:** workload supported by a BDM
- **Technical criteria:** minimum dependencies and test path, no governance
- **Qualitative analysis:** Current Team analysis

Plan





Cloud adoption plans convert the aspirational goals of the cloud adoption strategy into actions. It will help guide technical efforts, in alignment with the business strategy.

Blue Print

Digital estate

- **Rationalization:** inventory
- **Quantitative analysis:** asset optimized and sized properly
- **Qualitative analysis:** operational process

Initial organization alignment

- **Cloud Strategy Team**
  - Business IT: requirements and needs
  - IT management operations: traditional IT
  - Governance: executive sponsor, finance, business leadership, legal, security, HR
  - Cloud platform vendor: account success team
- **Cost management**
- **IT-business alignment**
- **Governance MVP**

Cattles! Not Pets. "Serverless"

Skill readiness plan

- **Organizational readiness**
- **Governance and security alignment**
- **Initial organization alignment**
- **Building technical skills:** business/technical, and certifications
- **Change management guidance**

SC-100

Container Image Format

Micro Services → AKS → Service Fabric

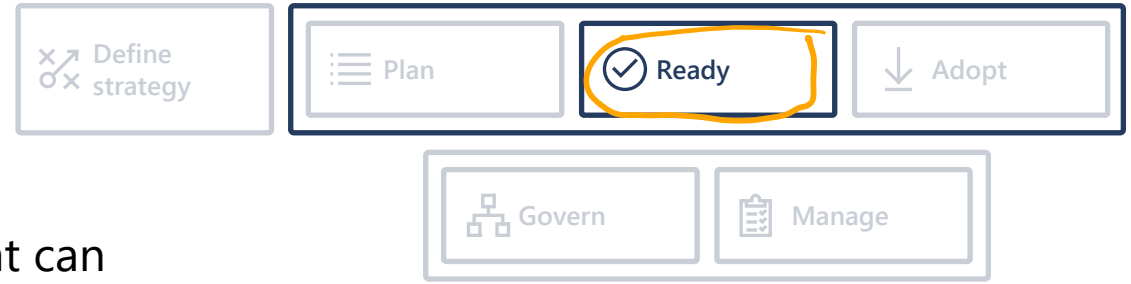
Cloud adoption plan

- **5R strategy:** rehost, refactor, rearchitect, rebuild, replace
- **Infrastructure migration:** VM, server, database focus
- **Application innovation:** born in the cloud applications, APIs
- **Data-driven innovation:** Focus on data consolidation and analysis

Serverless
Azure Function
Logic App
Code → (Flow)

Storage Account

Ready



Ready establishes a cloud foundation or Adoption Target that can provide hosting for any adoption efforts. This should consist of common denominators across 80–90% of cloud adoption.

Azure readiness guide

- **Resource management:** management groups, subscriptions, resource groups, resources tree hierarchy
- **Naming Standards**
- **Resource tags**

Key : Value

Landing zone infrastructure

- **Network design:** Vnet, hybrid, firewall, hub, front door, endpoints
- **Storage design:** disk, file, blobs, CDN
- **Compute design:** VMs, containers, apps, serverless
- **Data design:** Structured/ unstructured

Landing zone ID

- **Identity and access**
- Role-based access control **RBAC**
- Manage to **least privilege**

Landing zone cost

- **Costs and billing**
- Analyze **Cloud Costs**
- Monitor with **budgets**
- **Optimize** with recommendations
- **Manage** invoices and payments

Blueprints

- **AI**
- BigData
- Hybrid networks
- **Identity management**
- **IoT**
- **Serverless**
- **SAP**
- VMs
- WebApps
- DevOps

VM

Refactor

Read Only!

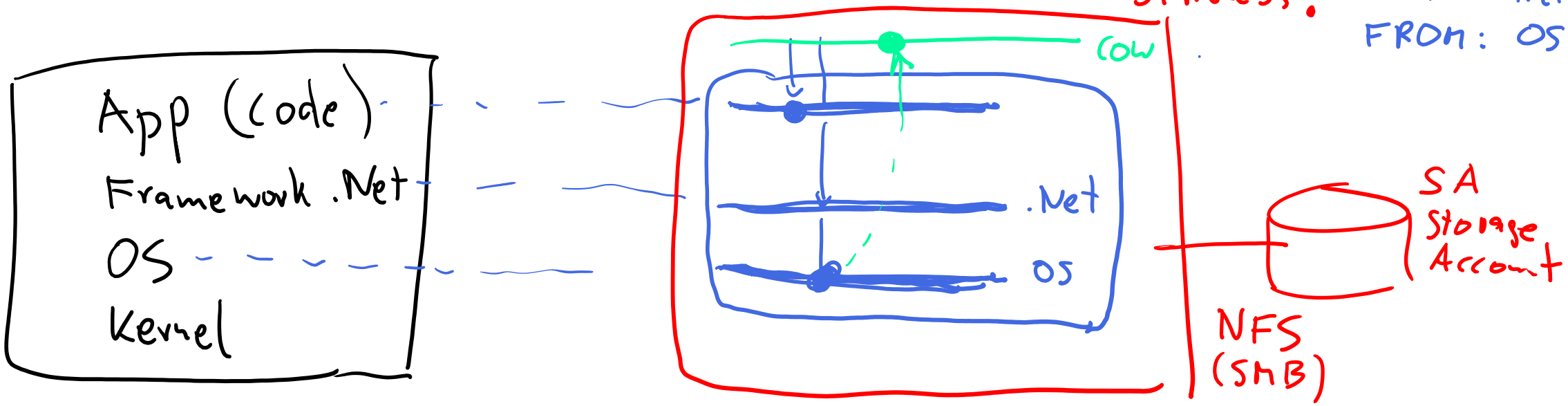
Docker Image (unionfs)

Dockerfile

COPY : App
RUN : .Net
FROM : OS

Docker Container

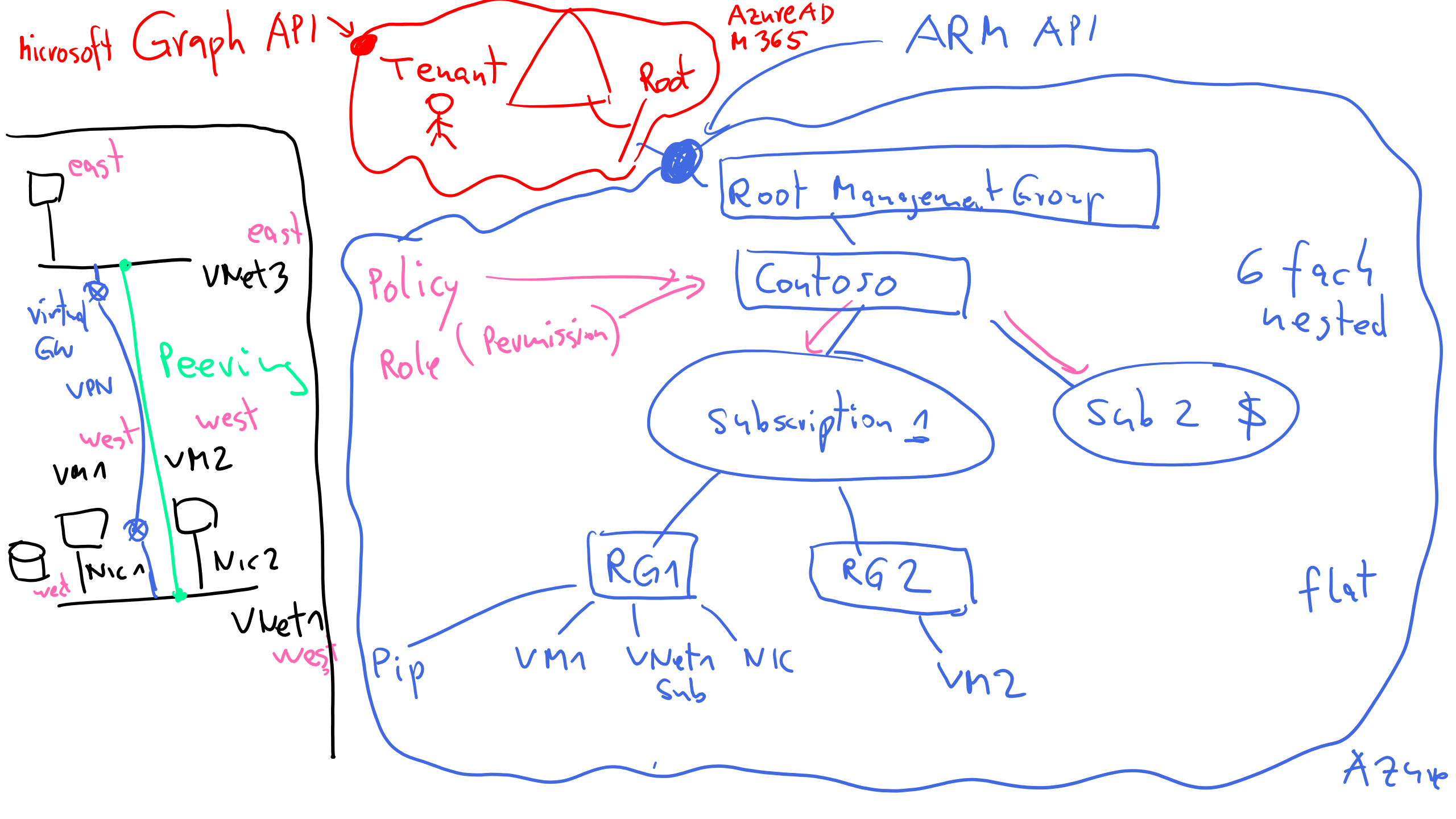
stateless!



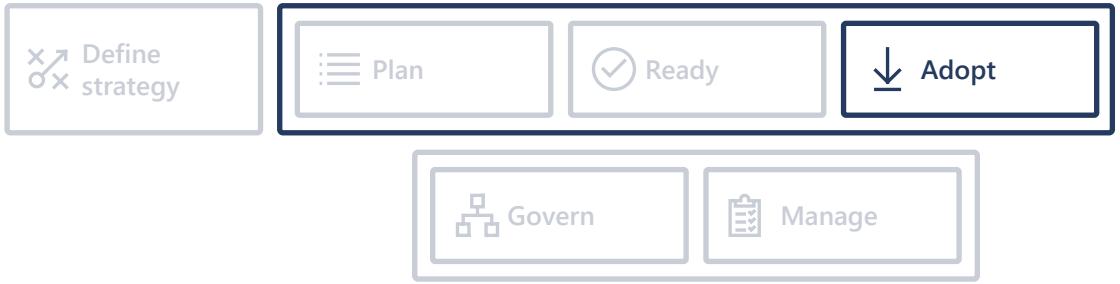
Hypervisor
(Hyper-V)

Docker Engine

Shared Kernel


Microsoft Graph API
Tenant
Root
AzureAD
M365
ARM API
east
east
VNet3
Virtual
GW
VPN
Peering
west
west
VM1
VM2
NIC1
NIC2
VNet1
west
west
Root Management Group
Policy
Role (Permission)
Contoso
6 tech
nested
Subscription 1
Sub 2 $
RG1
RG2
flat
Pip
VM1
VNet1
Sub
NIC
VM2
Azure

Adopt: Migrate



Cloud adoption will include workloads which do not warrant significant investments in the creation of new business logic. Those workloads could be moved to the migrated to the cloud.

Assess

- **Evaluate** assets and establish a plan
- **Validate pre-requisites:** landing zone, skilling
- **Drivers:** reducing capex, freeing up DC
- **Quantitative factors:** VMs, networking, compatibility
- **Qualitative factors:** process dependencies, critical business events

Migrate: rehost

- **Replicate** (lift and shift) on-prem functionality using cloud native technology
- Leverage **Azure Migration Guide**

- Azure Migrate Project

Optimize

- **Balance performance and price**
- Deliver the right experience **within budget**
- **Resize VM size, resize storage, resize database**

Secure and manage

- Prepare the migrated asset for ongoing operations: **security, monitoring, configuration**

Adopt: Innovate

Older apps can take advantage of many of the same cloud-native benefits by modernizing the solution or components of the solution. Modern DevOps invites into the process to create shorter feedback loops and better customer experiences.

Infrastructure abstraction

- Cloud native applications built from the ground up **optimized for cloud:**
- Resiliency
- Global scale
- Agility
- Security
- Autoscaling

Innovate: refactor

- Refactoring an application to fit a **PaaS/Serverless-based model** or refactoring code to deliver on new business opportunities.
- **Drivers:** faster and shorter updates, code portability, greater cloud efficiency (resources, speed, cost)

Innovate: rearchitect

- Modify existing applications into managed **containers** to take advantage of cloud native benefits
- **Drivers:** application scale and agility, easier adoption of new cloud capabilities, mix of technology stacks

Innovate: rebuild

- A new code base is created to align with a **cloud-native** approach. **App Data and AI Services**
- **Drivers:** accelerate innovation, build apps faster, reduce operational cost

GitHub Copilot

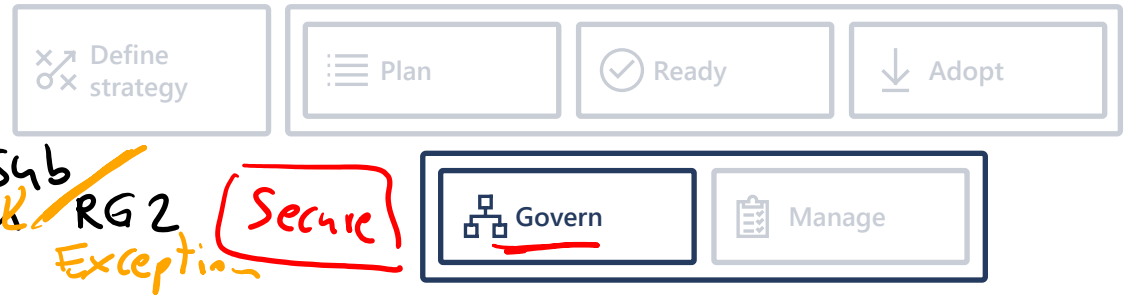
DevOps

- Culture
- Development
- Testing
- Release
- Monitoring
- Management

CI/CD

VS Code
Azure
Git

Govern



Policy definition ensures consistency across adoption efforts. Alignment to governance/compliance requirements is key to maintain a well-managed cross-cloud environment.

Business risk

- **Document** evolving business risk
- Document risk tolerance based on **data classification**, and **application criticality**

Policy & compliance

- Convert risk decisions into **policy statements**
- Establish cloud adoption boundaries

Processes

- Establish processes to **monitor violations**
- Adhere to corporate policies
- **Cloud Center of Excellence**

Cost management

- Evaluate and monitor cost
- Limit IT spend
- Scale based on business demand
- Create cost accountability

Security baseline

- Compliance with IT Security requirements
- Apply security baseline to all adoption efforts

Resource consistency

- Consistency in resource configuration
- Enforce on boarding, recovery and discoverability practices

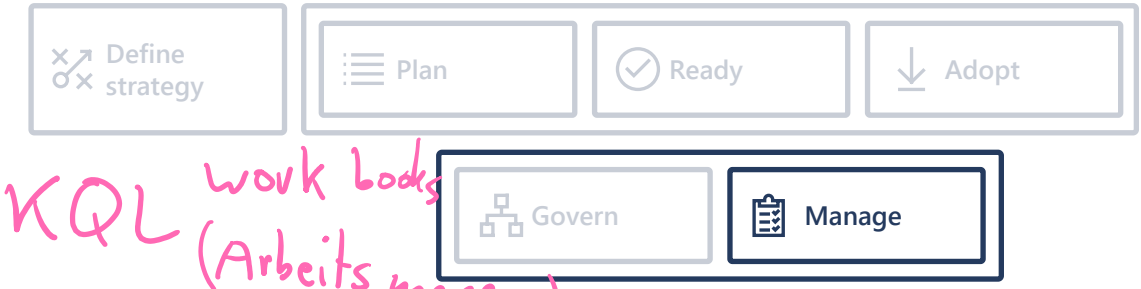
Identity baseline

- Enforce identity and access baseline
- Apply role definitions and assignments

Deployment acceleration

- Centralize templates
- Drive consistency and standardization

Manage and operations



Manage and operations enumerates, implements, and iteratively reviews related to the expected operational behavior of the service.

KQL
work books
(Arbeits mappe)
Azure Monitor
Log Analytics WS
DCR
VM
AMA
Legacy (MMA)

Management

- Identify critical operations for business operations
- Map operations to services
- Analyze services dependencies
- Create high level view service dashboards

Monitoring

- Enable data collection
- Identify operations baseline
- Generate alerts
- Measure Service Metrics and generate SLAs

Resiliency

- **Enable a resilient** platform
- Recover from failures with minimal downtime and minimum data loss before
- **Evolve to a highly available platform**

Microsoft Cloud Adoption Framework for Azure