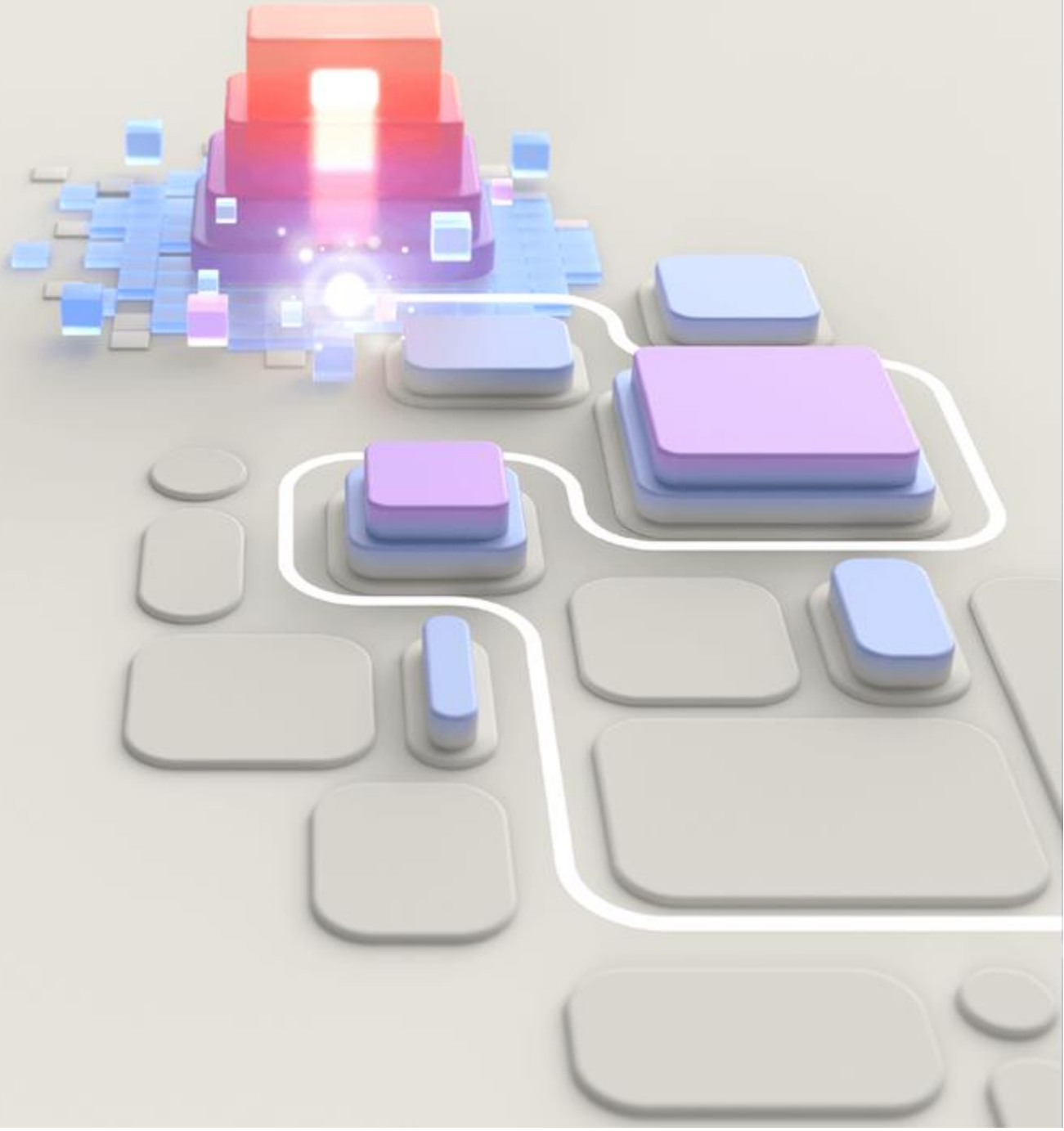
Microsoft

AZ-104

Administer Azure Virtual Machines

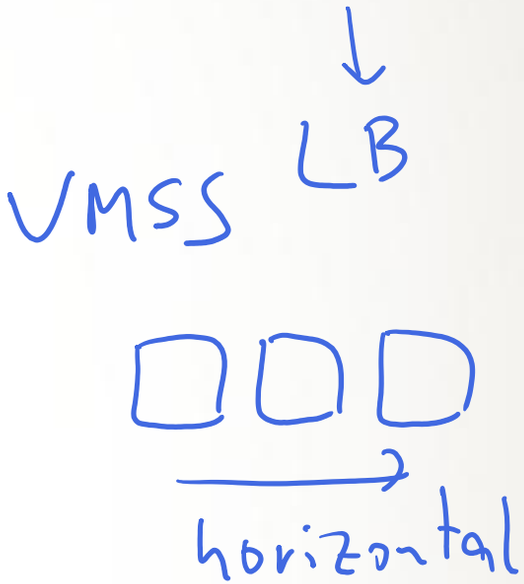


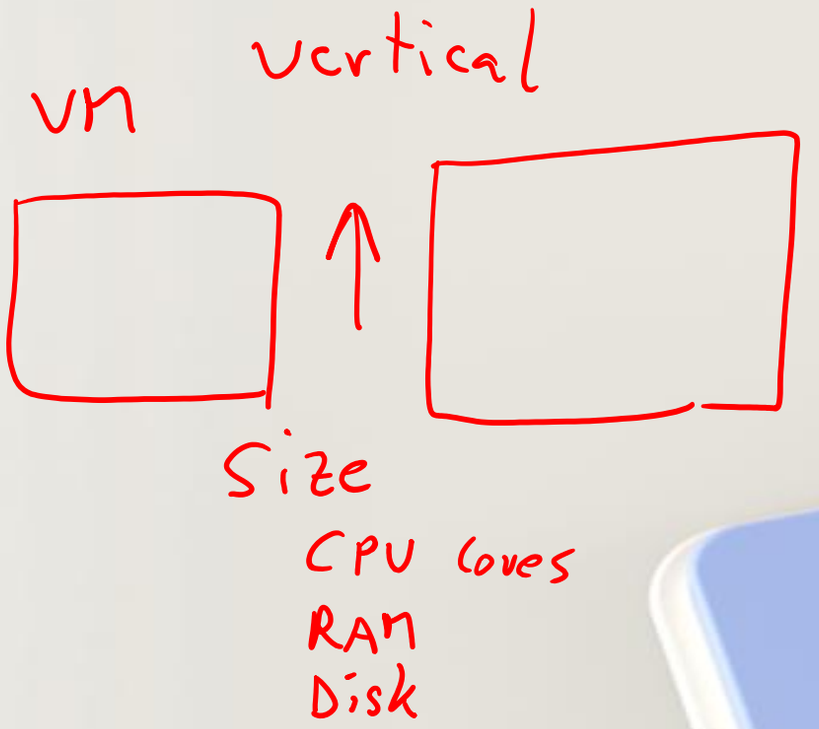
AZ-104 Agenda

01: Administer Identity
02: Administer Governance and Compliance
03: Administer Azure Resources
04: Administer Virtual Networking
05: Administer Intersite Connectivity
06: Administer Network Traffic Management
07: Administer Azure Storage
08: Administer Azure Virtual Machines
09: Administer PaaS Compute Options
10: Administer Data Protection
11: Administer Monitoring

Learning Objectives - Administer Azure Virtual Machines

- Introduction to Azure Virtual Machines
- Configure Virtual Machine Availability
- Lab 08 – Manage Virtual Machines





Introduction to Azure Virtual Machines

Learning Objectives – Introduction to Azure Virtual Machines

- Review Cloud Services Responsibilities
- Plan Virtual Machines
- Determine Virtual Machine Sizing
- Determine Virtual Machine Storage
- Demonstration - Creating a VM in the Portal
- Connect to Virtual Machines
- Learning Recap

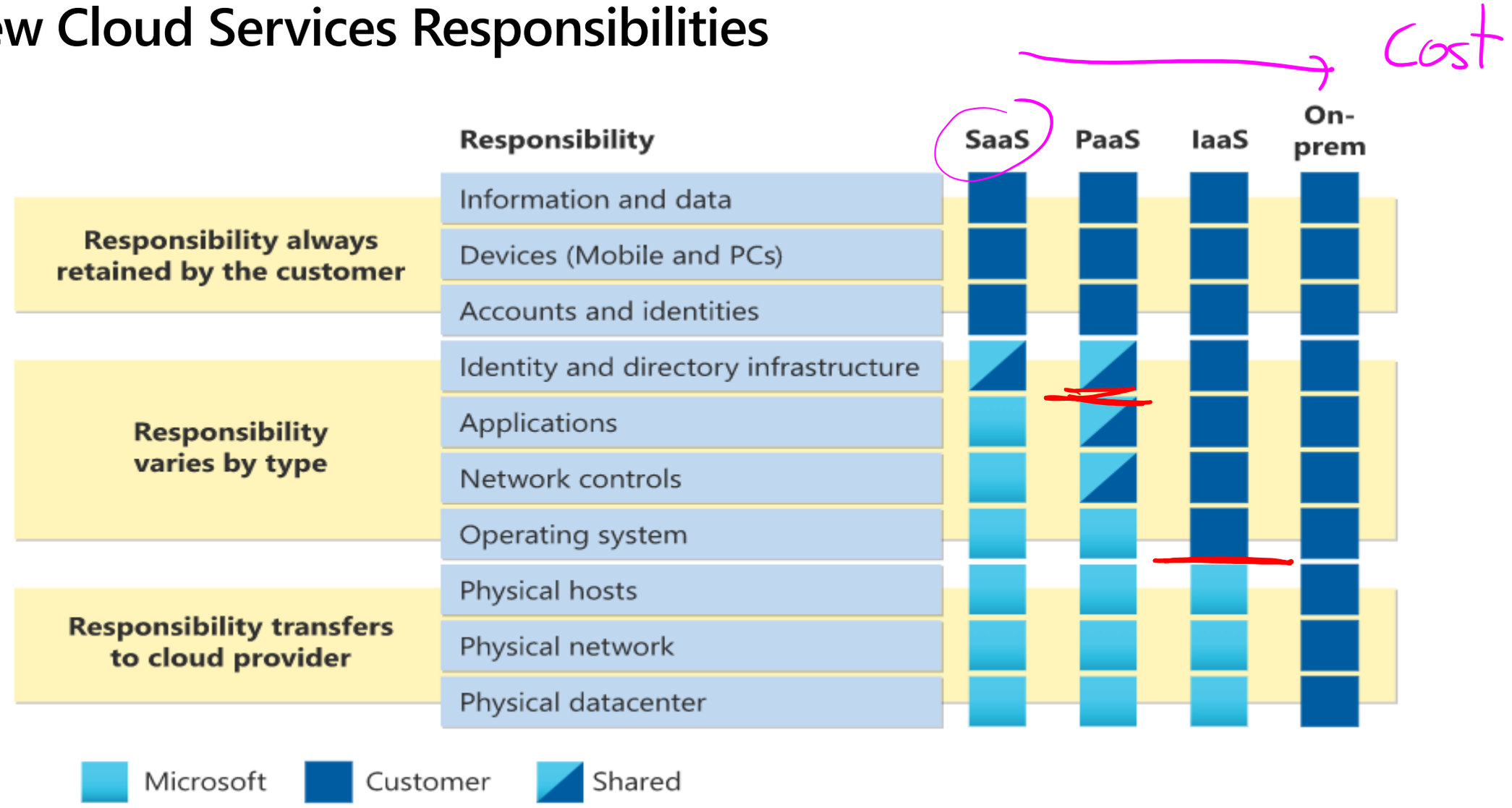
Implement and manage Azure compute resources (20-25%): Create and configure virtual machines (VMs)

- Create a VM
- Move VMs between resource groups
- Manage VM sizes
- Manage VM disks
- Configure VM network settings

Configure secure access to virtual networks

- Implement Azure Bastion

Review Cloud Services Responsibilities



Plan Virtual Machines

Start with the network

Name the virtual machine

Choose a location

- Each region has different hardware and service capabilities
- Locate Virtual Machines as close as possible to your users and to ensure compliance and legal obligations

Consider pricing

Determine Virtual Machine Sizing

Type	Description
General purpose	Balanced CPU-to-memory ratio.
Compute optimized	High CPU-to-memory ratio.
Memory optimized	High memory-to-CPU ratio.
Storage optimized	High disk throughput and I/O.
GPU	Specialized virtual machines targeted for heavy graphic rendering and video editing.
High performance compute	Our fastest and most powerful CPU virtual machines

Determine Virtual Machine Storage

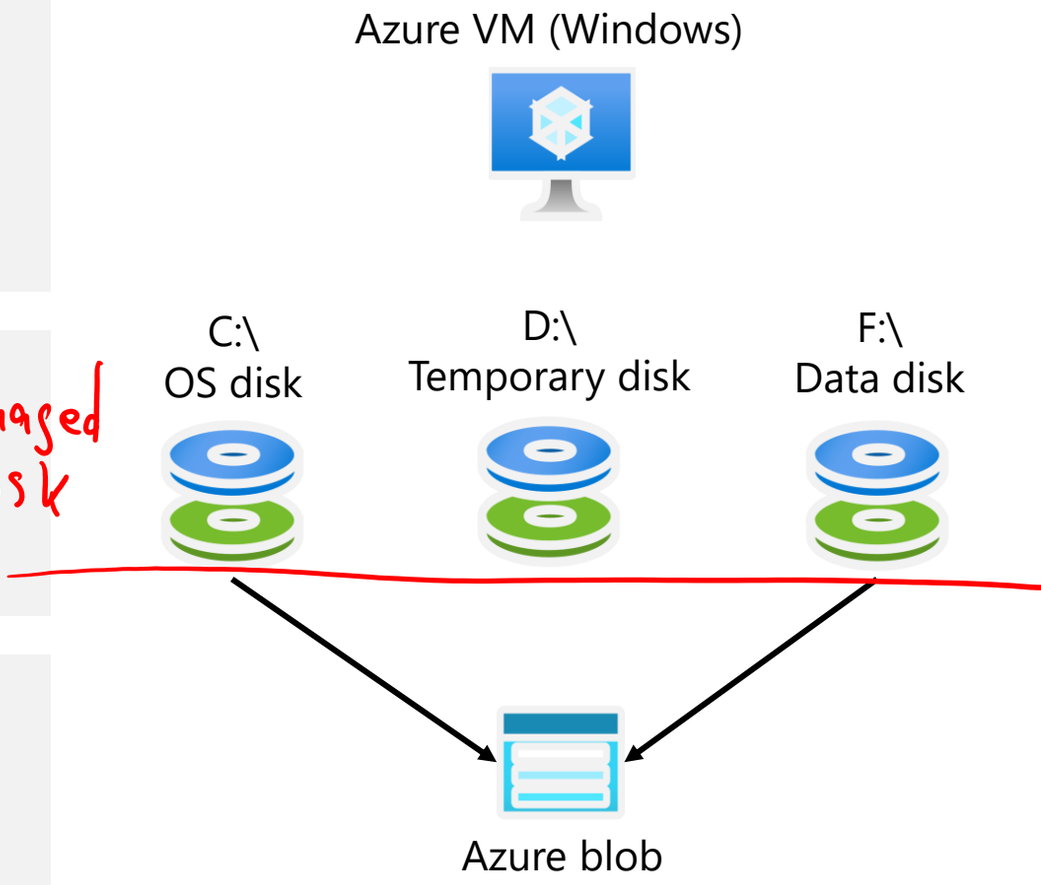
Each Azure VM has two or more disks:

- OS disk
- Temporary disk (not all SKUs have one, content can be lost)
- Data disks (optional)

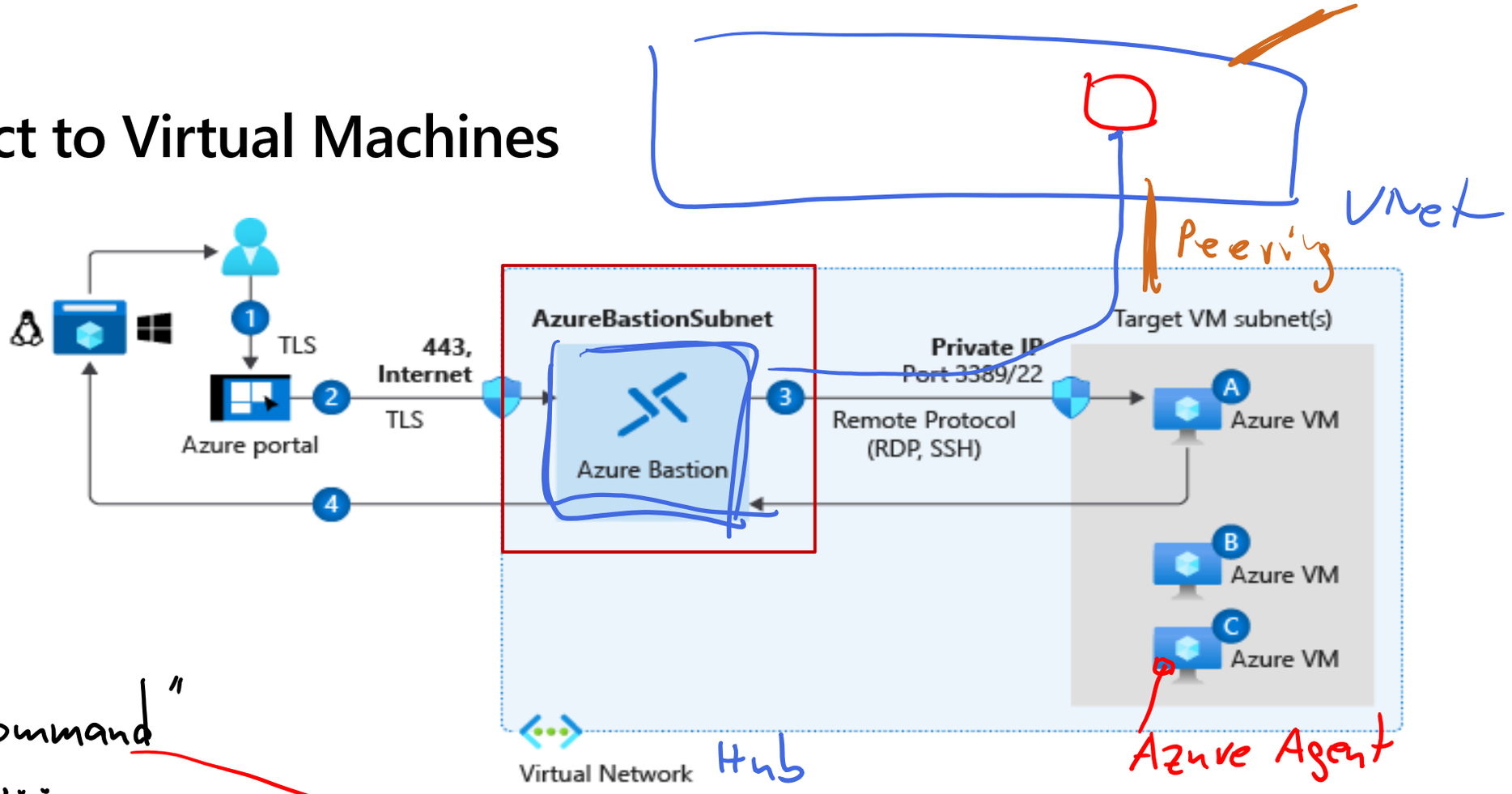
OS and data disks reside in Azure Storage accounts:

- Azure-based storage service
- Standard (HDD, SSD) or Premium (SSD), or Ultra (SSD)

Azure VMs use managed disks

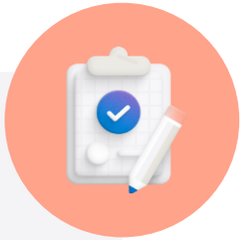


Connect to Virtual Machines



Bastion Subnet for RDP/SSH through the Portal over SSL	Remote Desktop Protocol for Windows-based Virtual Machines	Secure Shell Protocol for Linux based Virtual Machines

Learning Recap – Introduction to Virtual Machines



Check your knowledge questions and additional study

Reference modules

- Introduction to Azure virtual machines
- Provisioning a Linux virtual machine in Microsoft Azure
- Create a Windows virtual machine in Azure
- Connect to virtual machines through the Azure portal by using Azure Bastion

Configure Virtual Machine Availability

Configure Azure Virtual Machine Availability Introduction

- Plan for Maintenance and Downtime
- Setup Availability Sets
- Review Update and Fault Domains
- Review Availability Zones
- Compare Vertical to Horizontal Scaling
- Create and Configure Scaling
- Demonstration – Virtual Machine Scaling
- Bring Azure innovation to your hybrid environments with Azure Arc (optional)
- Learning Recap

Implement and manage Azure compute resources (20-25%): Create and configure virtual machines

- Deploy virtual machines to availability zones and availability sets
- Deploy and configure an Azure Virtual Machine Scale Sets

Plan for Maintenance and Downtime

Unplanned Hardware Maintenance

When the platform predicts a failure, it will issue an **unplanned hardware maintenance** event

Action: Live migration

Unexpected Downtime

Unexpected Downtime is when a virtual machine fails unexpectedly

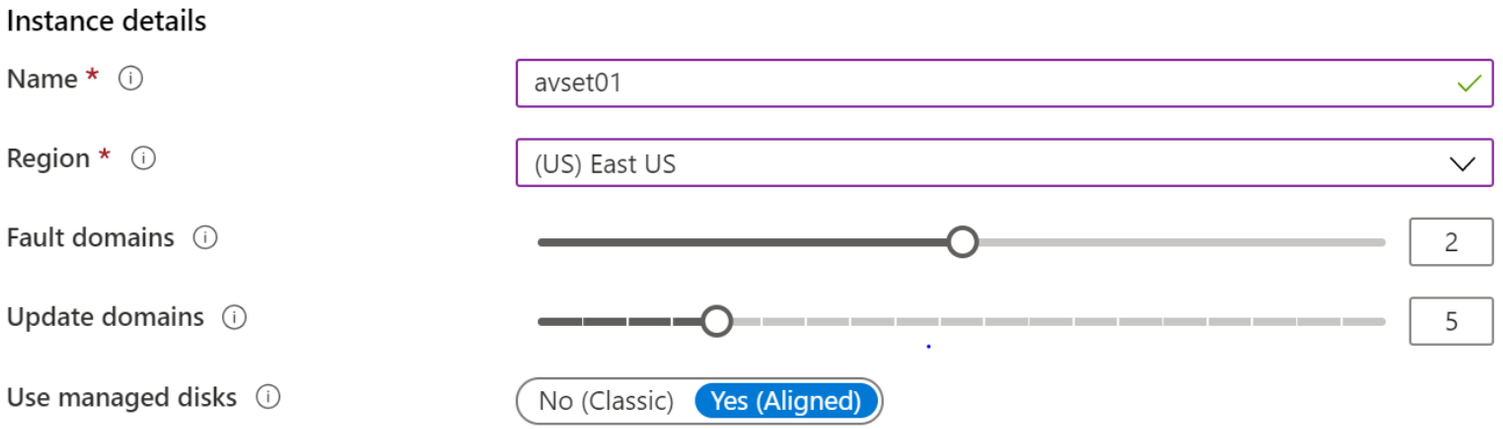
Action: Automatically migrate (heal)

Planned Maintenance

Planned Maintenance events are periodic updates made to the Azure platform

Action: No action

Setup Availability Sets



Two or more instances in Availability Sets = 99.95% SLA

Configure multiple Virtual Machines in an Availability Set

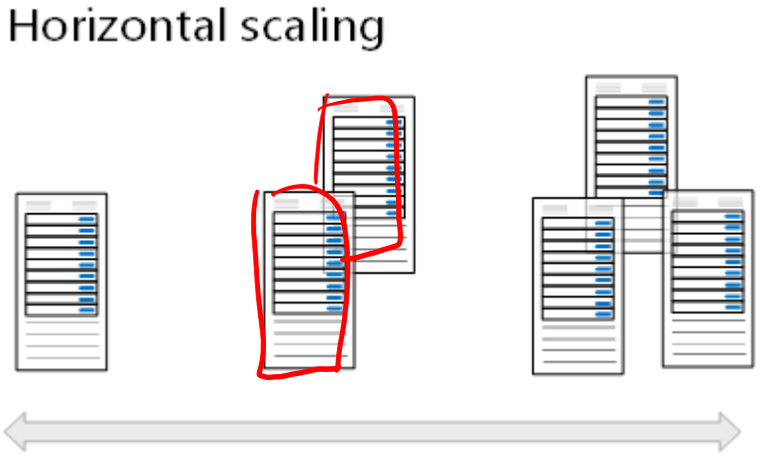
Configure each application tier into separate Availability Sets

Combine a Load Balancer with Availability Sets

Use managed disks with the Virtual Machines

Compare Vertical to Horizontal Scaling

VMSS
Scale Set



Vertical scaling (scale up and scale down) is the process of increasing or decreasing power to a single instance of a workload; usually manual

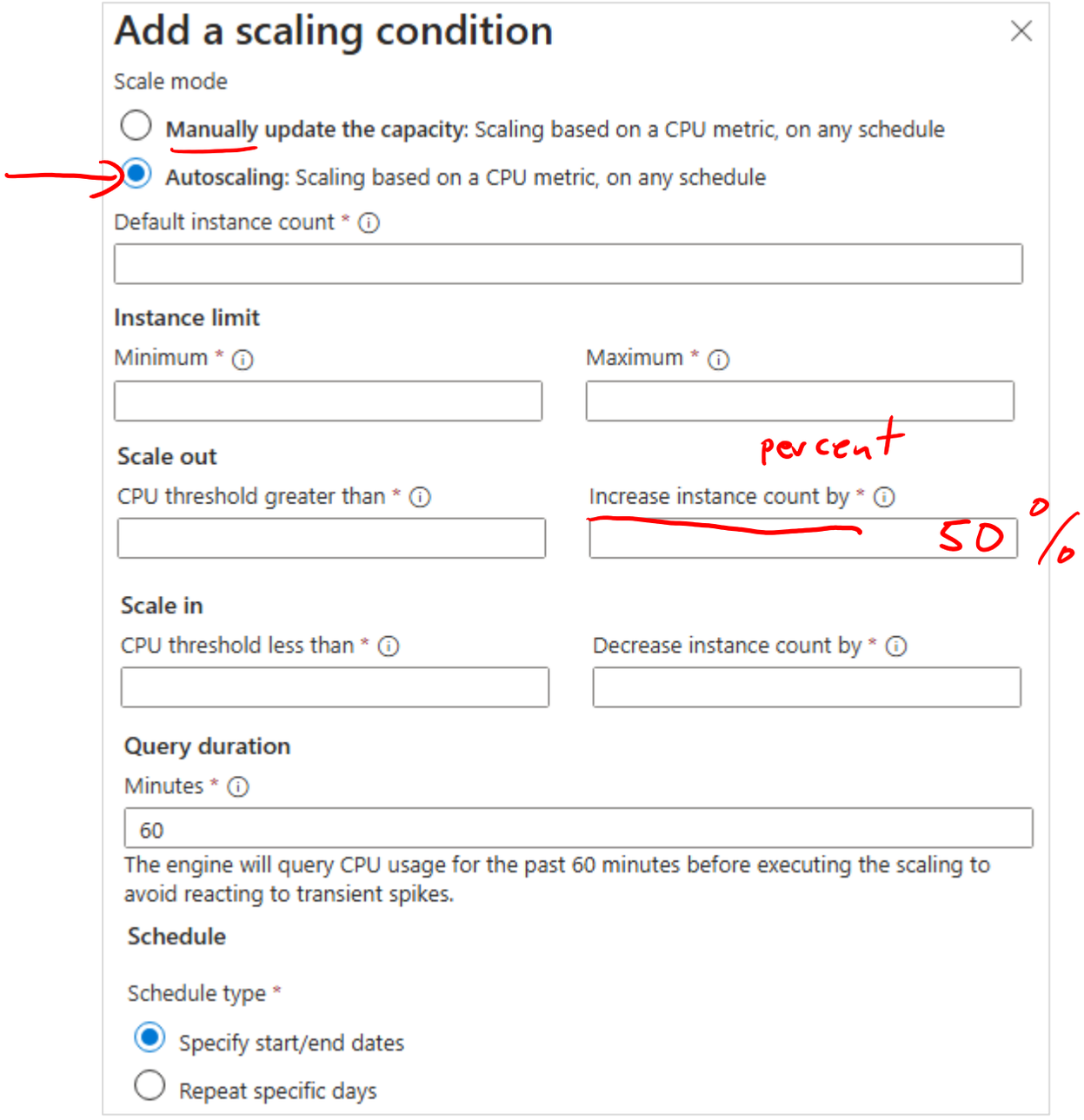
Horizontal scaling (scale out and scale in) is the process of increasing or decreasing the number of instances of a workload; frequently automated

Create and configure scaling

Manually update or autoscale

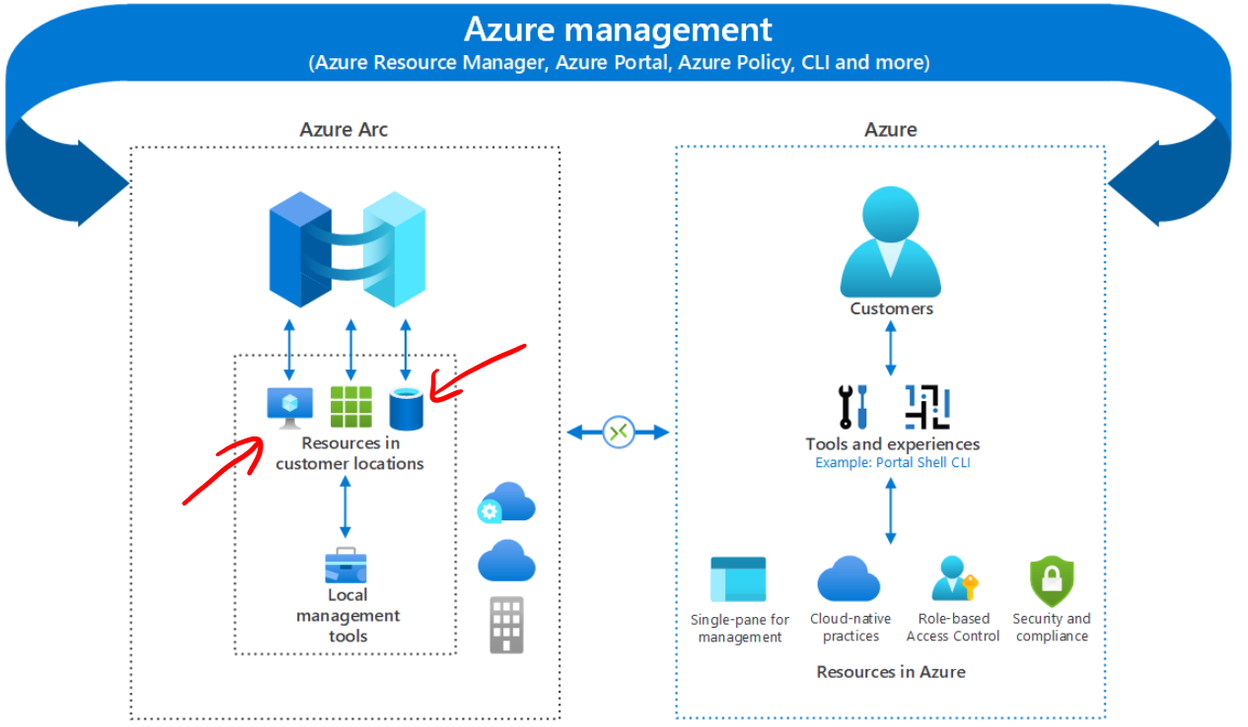
Define a minimum, maximum, and default number of VM instances

Create more advanced scale sets with scale out and scale in parameters

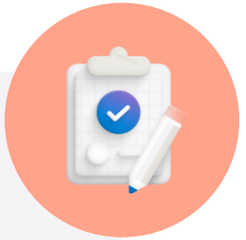


Bring Azure innovation to your hybrid environments with Azure Arc

- Manage your entire environment of existing non-Azure and/or on-premises resources
- Manage virtual machines, Kubernetes clusters, and databases as if they are running in Azure.
- Use familiar Azure services and management capabilities, regardless of where your resources live
- Use traditional IT Ops while introducing DevOps practices to support new cloud native patterns in your environment



Learning Recap – Configure Virtual Machine Availability

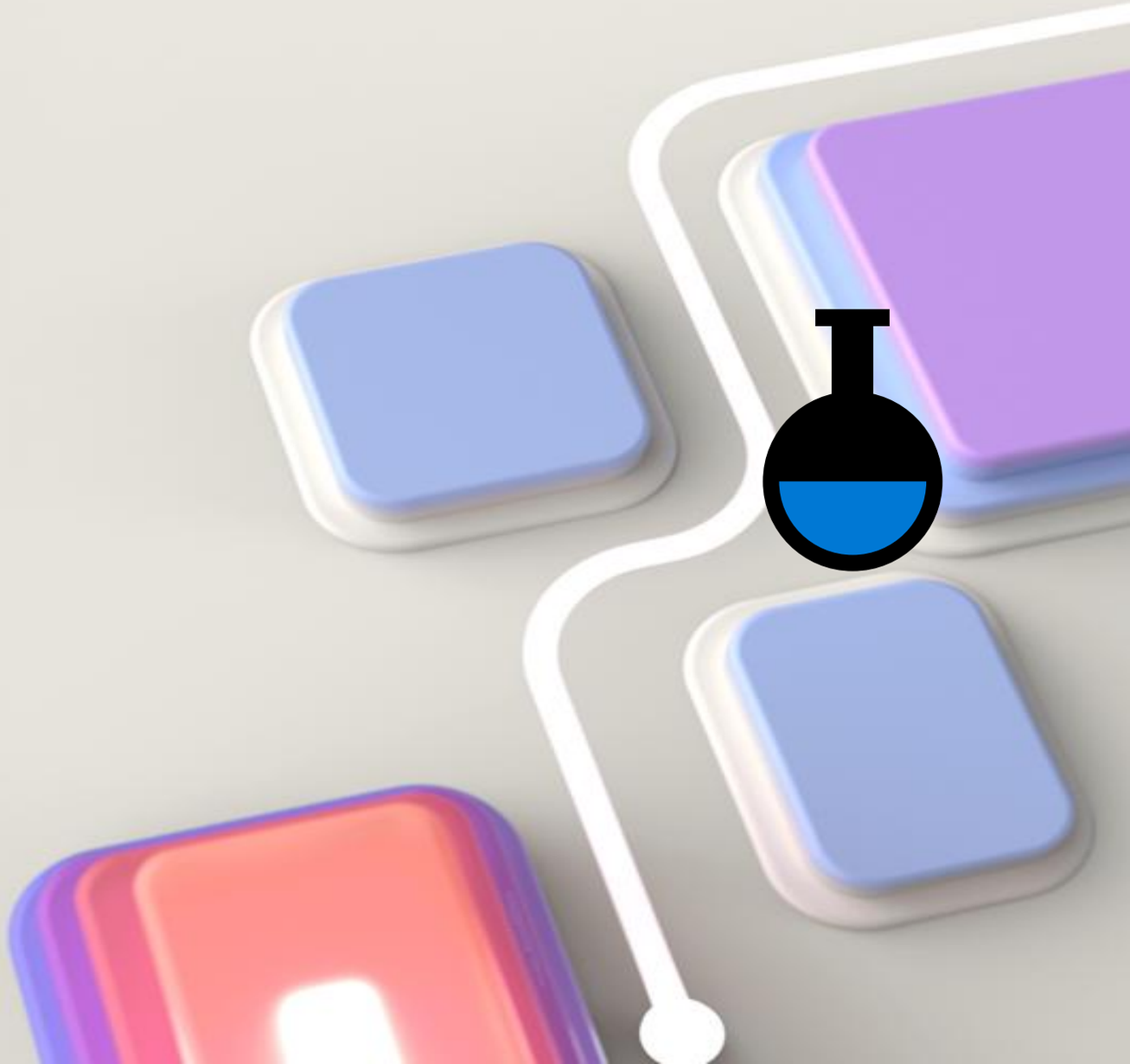


Reference modules

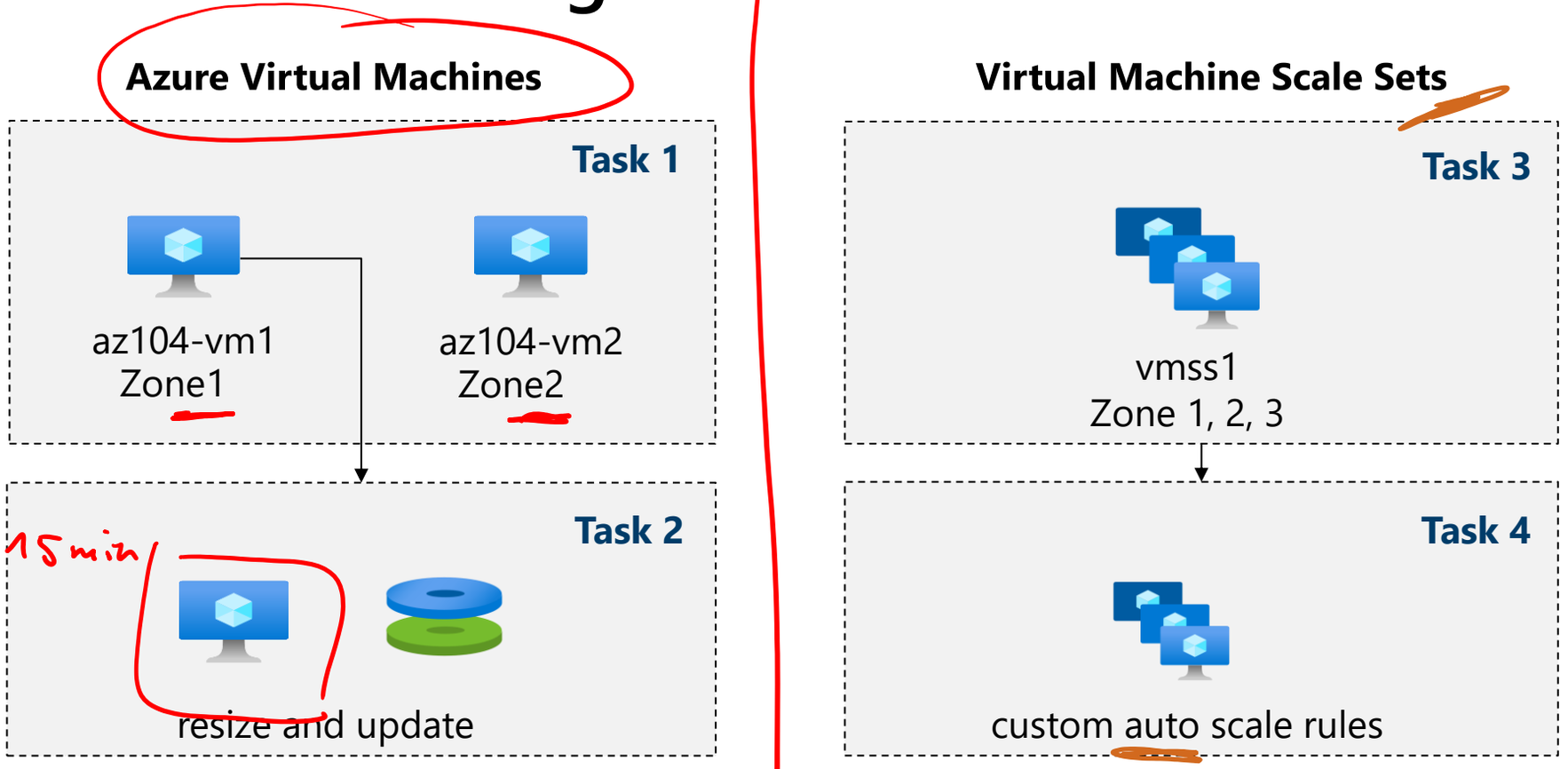
- Configure virtual machine availability
- Introduction to Azure Virtual Machine Scale Sets
- Build a scalable application with virtual machine scale sets
- Introduction to Azure Arc (optional)

Check your knowledge questions and additional study

Lab – Manage Virtual Machines



Lab 08 – Architecture diagram



Task 5: Create a virtual machine using Azure PowerShell (option 1)
Task 6: Create a virtual machine using the CLI (option 2)

End of presentation