Microsoft

AZ-104

Administer Azure Virtual Machines

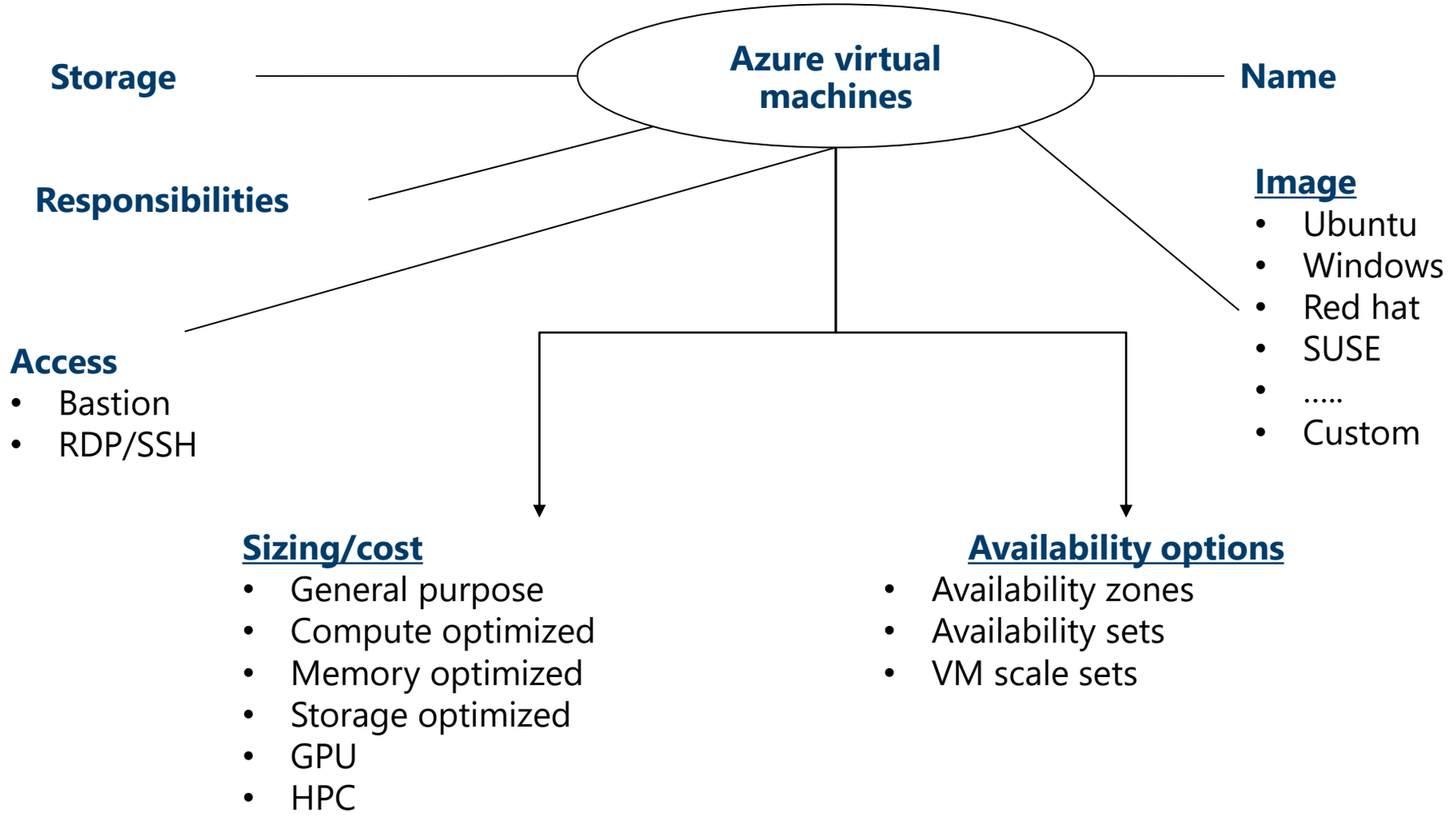
AZ-104 Course Outline

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

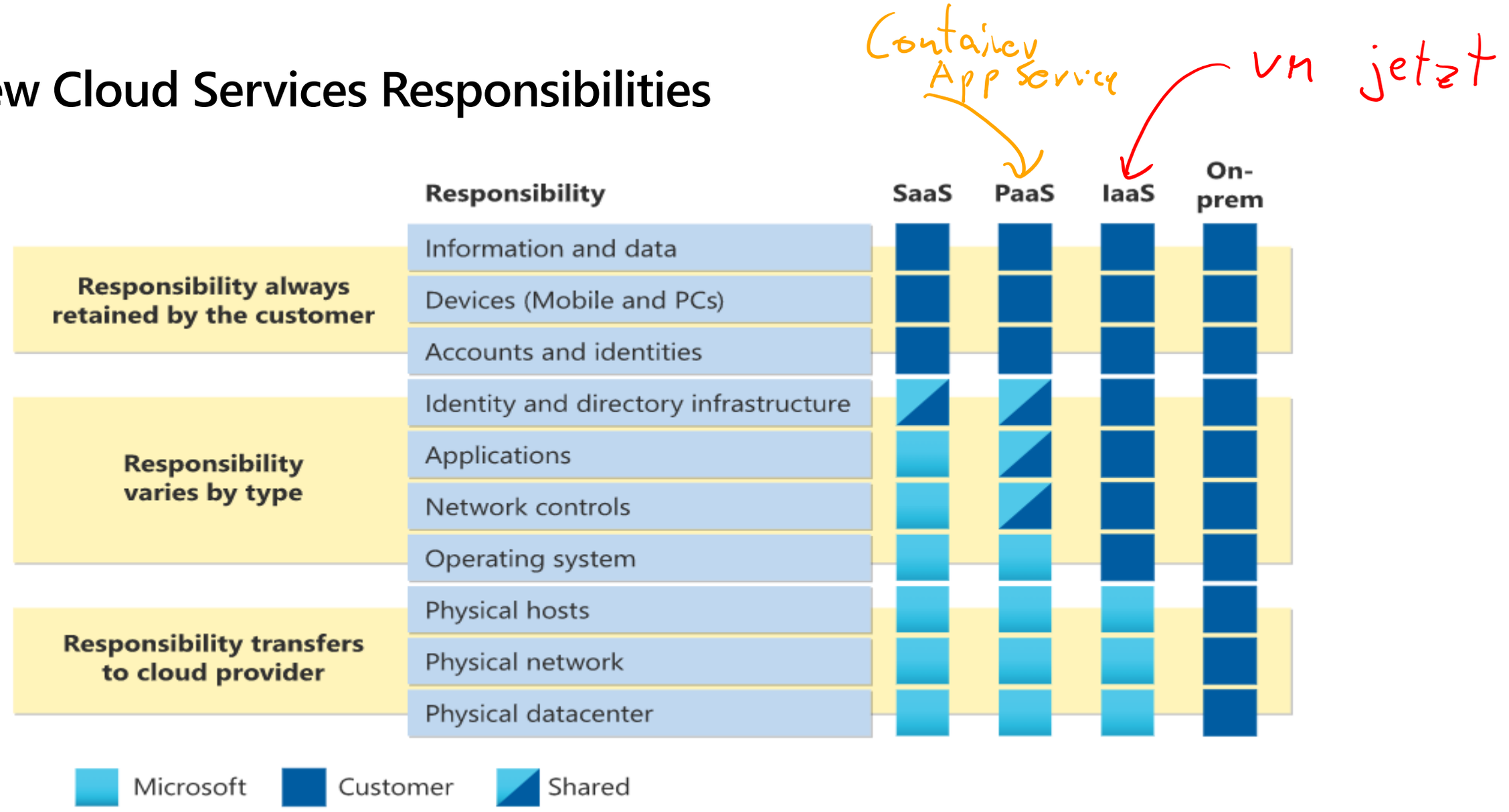
- Configure Virtual Machines
- Configure Virtual Machine Availability
- Lab 08 – Manage Virtual Machines

Administer Virtual Machines whiteboard



Configure Virtual Machines

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

70+ Azure regions
Available in 140 countries

Determine Virtual Machine Sizing

DS2_v3

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

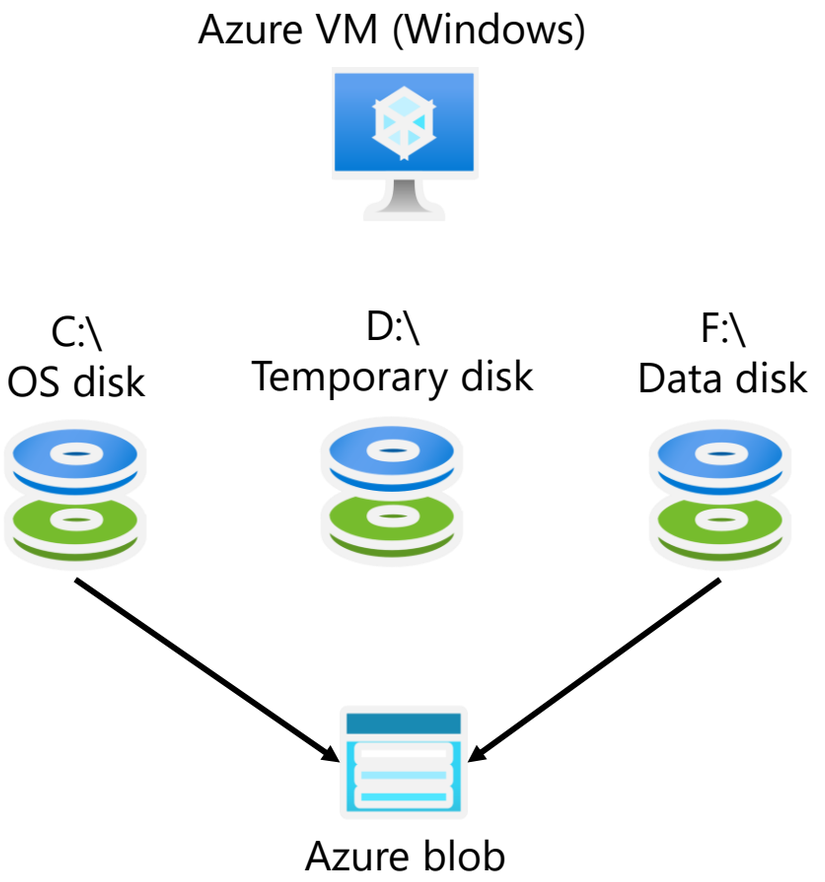
Each Azure VM has two or more disks:

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

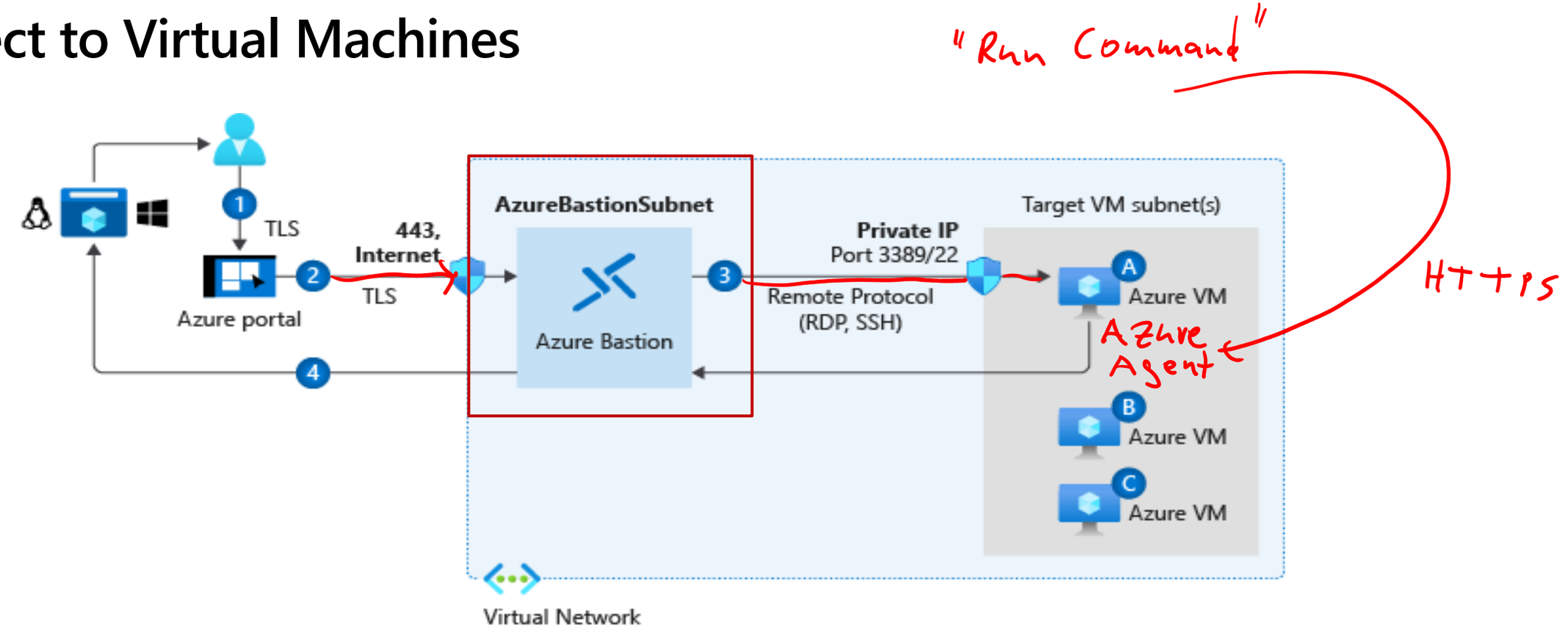
OS and data disks reside in Azure Storage accounts:

- 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

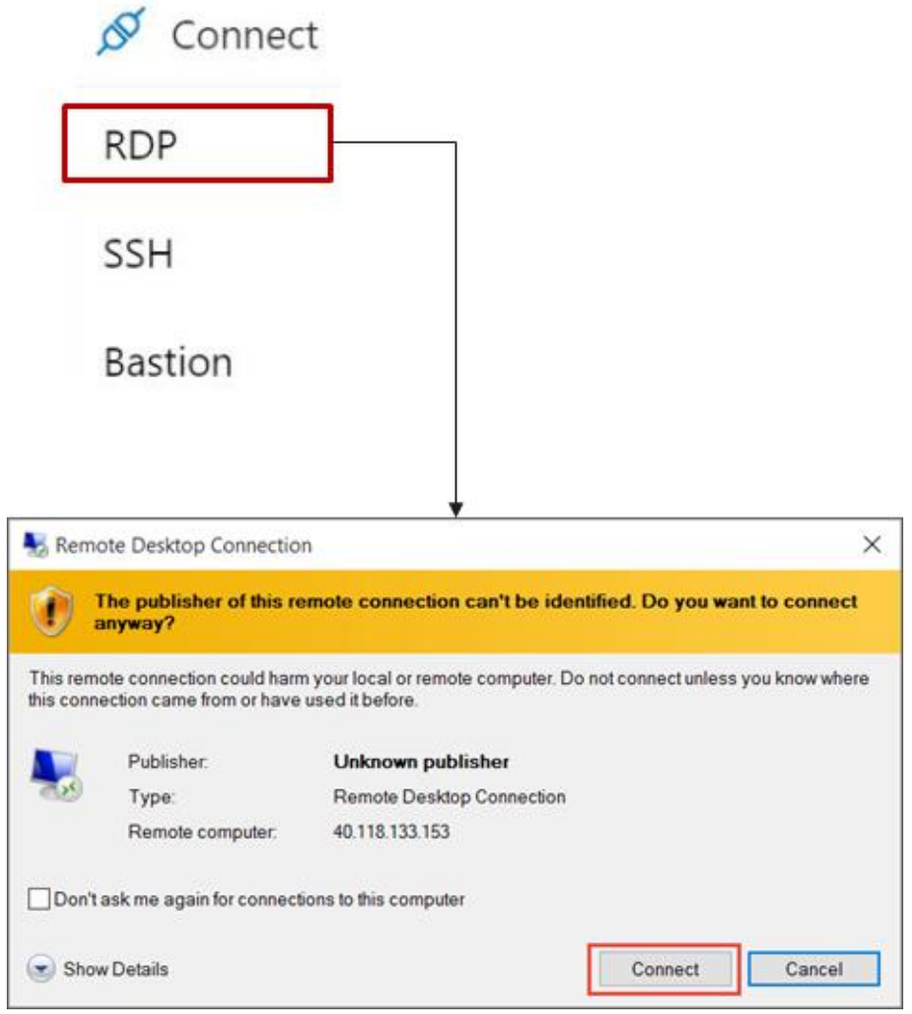
Remote Desktop Protocol for Windows-based Virtual Machines

Secure Shell Protocol for Linux based Virtual Machines

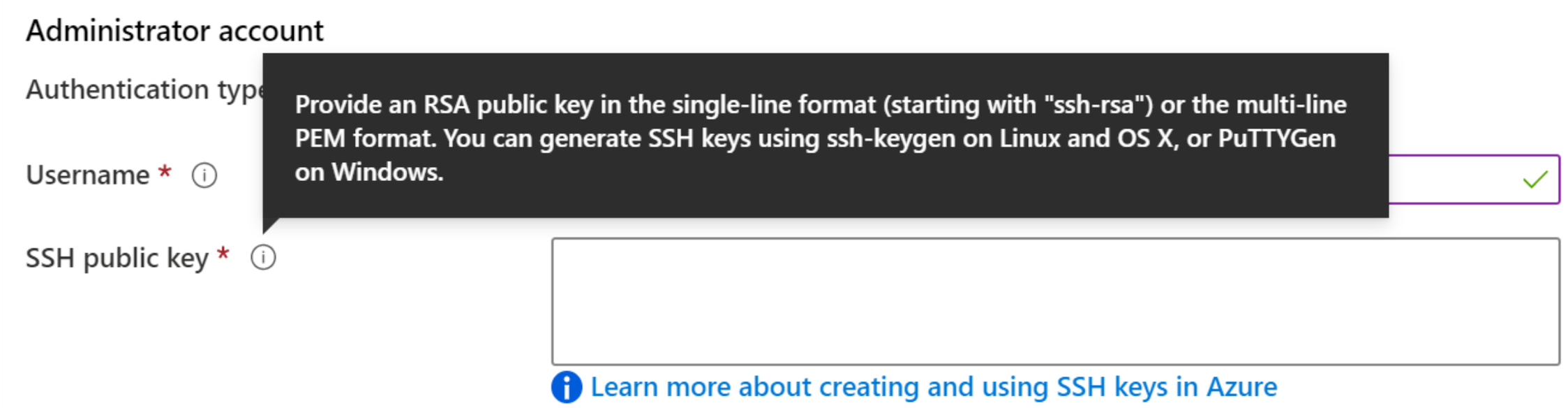
Connect to Windows Virtual Machines

Remote Desktop Protocol (RDP) creates a GUI session and accepts inbound traffic on TCP port 3389

WinRM creates a command-line session so you can run scripts



Connect to Linux Virtual Machines



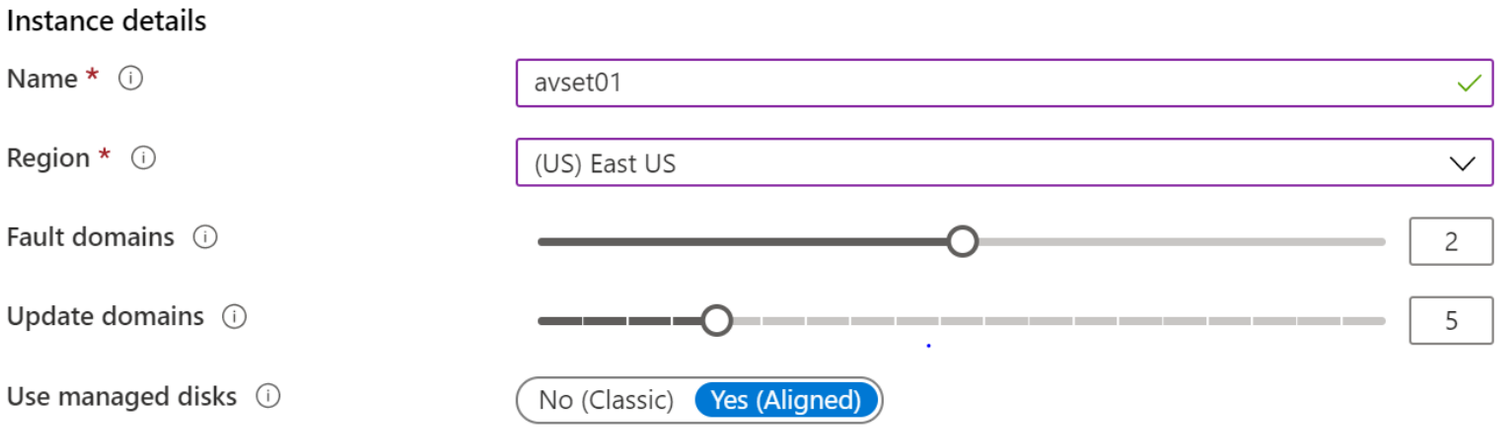
Authenticate with a SSH public key or password

SSH is an encrypted connection protocol that allows secure logins over unsecured connections

There are public and private keys

Configure Virtual Machine Availability

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

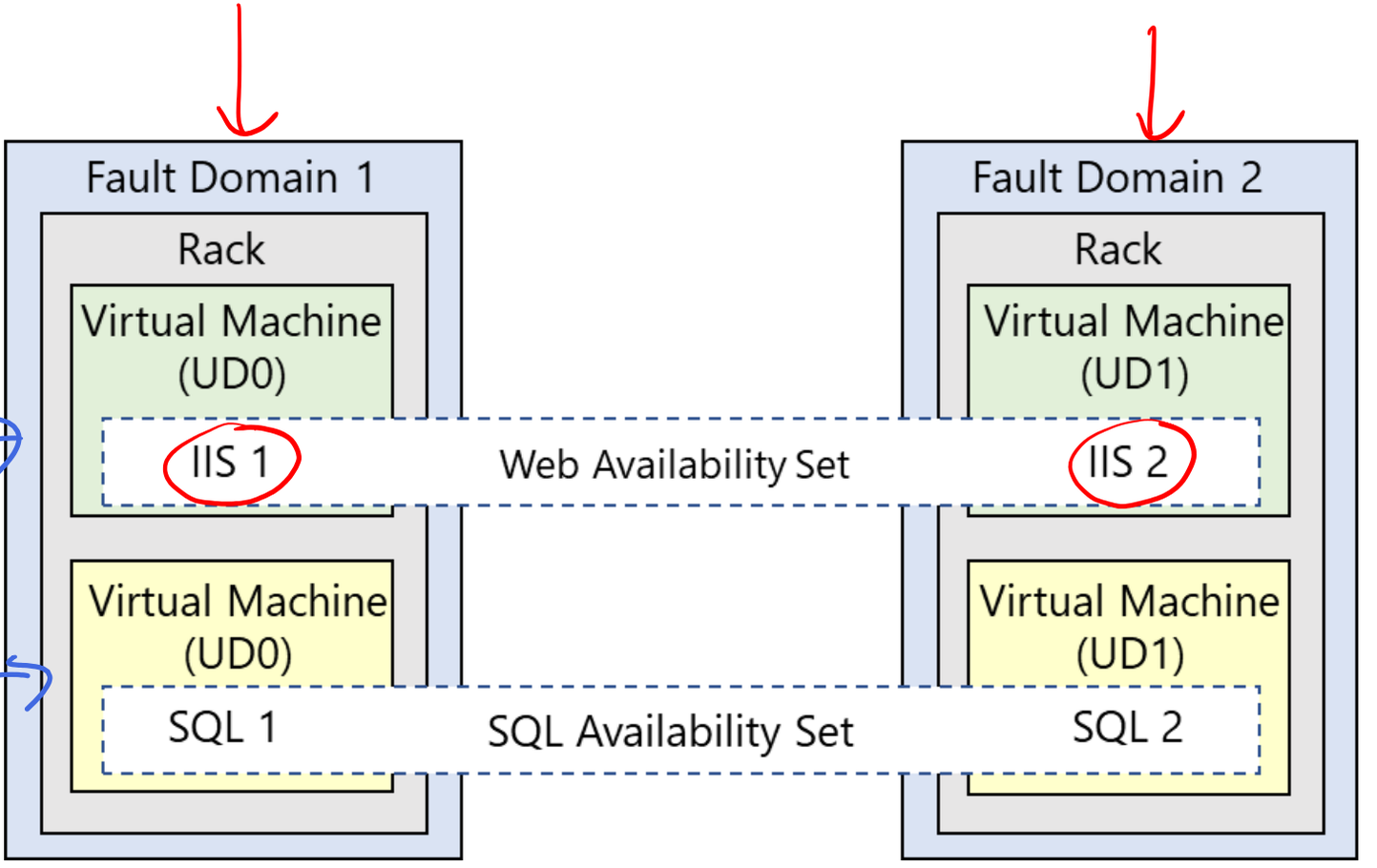
Combine a Load Balancer with Availability Sets

Use managed disks with the Virtual Machines

Review Update and Fault Domains

Update domains allows Azure to perform incremental or rolling upgrades across a deployment. During planned maintenance, only one update domain is rebooted at a time

Fault Domains are a group of Virtual Machines that share a common set of hardware, switches, that share a single point of failure. VMs in an availability set are placed in at least two fault domains



Review Availability Zones

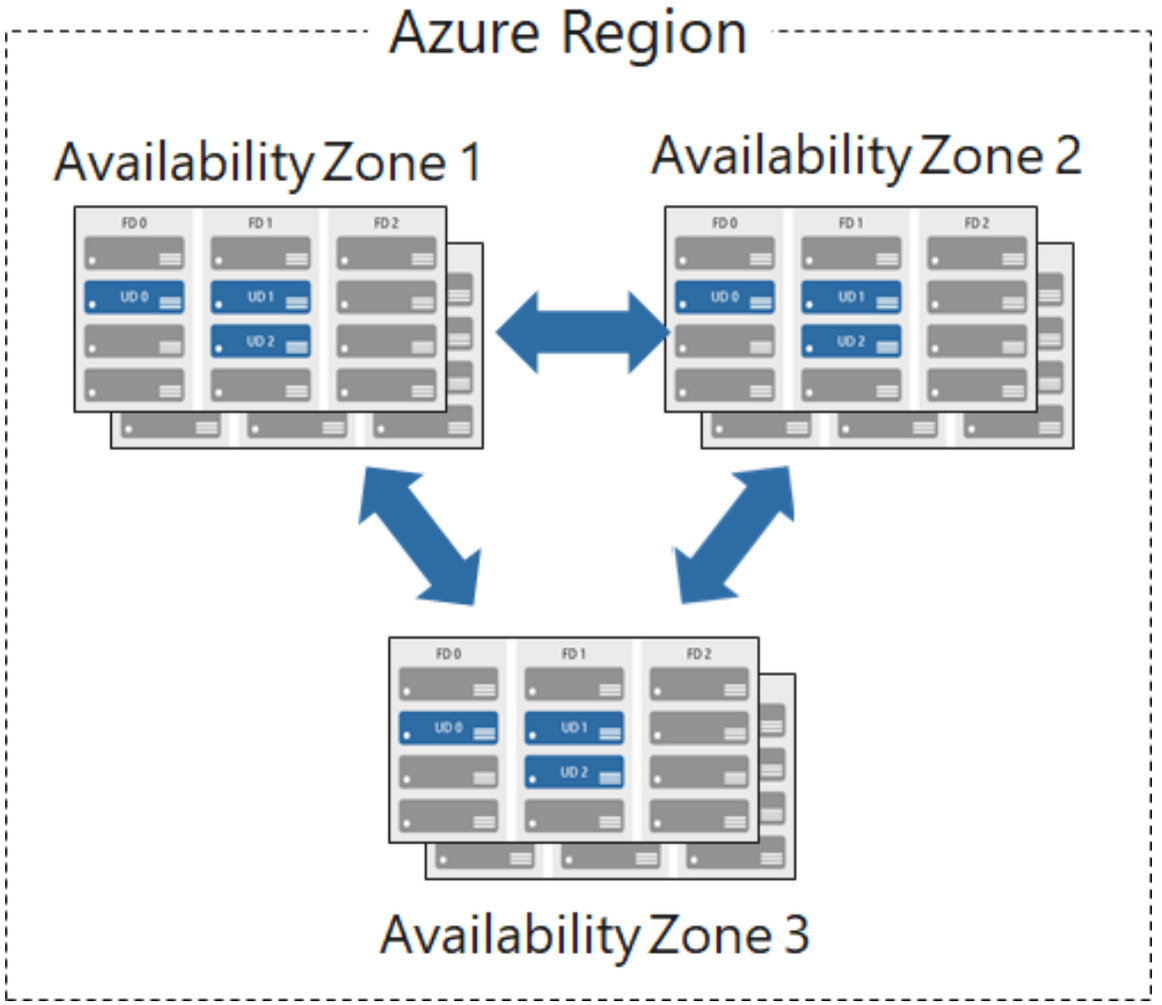
Unique physical locations in a region

Includes datacenters with independent power, cooling, and networking

Protects from datacenter failures

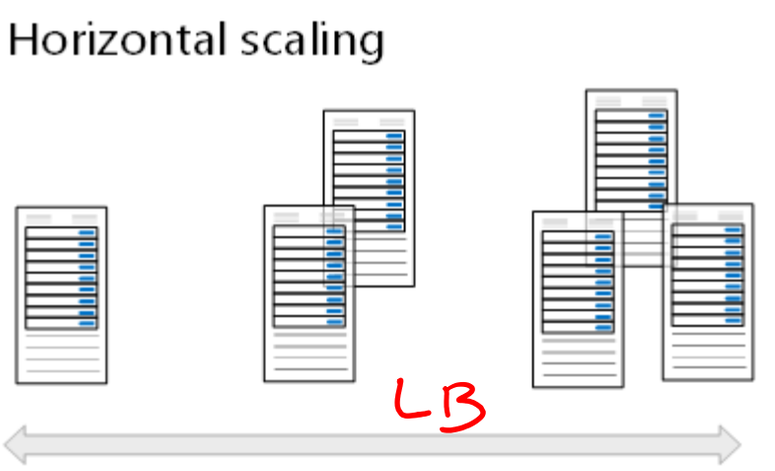
Combines update and fault domains

Provides 99.99% SLA



Compare Vertical to Horizontal Scaling

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 Scale Sets

Instance count. Number of VMs in the scale set (0 to 1000)

Instance size. The size of each virtual machine in the scale set

Azure Spot Instance. Unused capacity at a discounted rate

Use managed disks

Enable scaling beyond 100 instances

Orchestration

A scale set has a "scale set model" that defines the attributes of virtual machine instances (size, number of data disks, etc). As the number of instances in the scale set changes, new instances are added based on the scale set model.
Learn more about the scale set model

Orchestration mode * ⓘ
- (●) **Flexible:** achieve high availability at scale with identical or multiple virtual machine types
- ( ) **Uniform:** optimized for large scale stateless workloads with identical instances

Security type ⓘ: Standard

Instance details

Image * ⓘ: Ubuntu Server 20.04 LTS - x64 Gen2
See all images | Configure VM generation

VM architecture ⓘ
- ( ) Arm64
- (●) x64

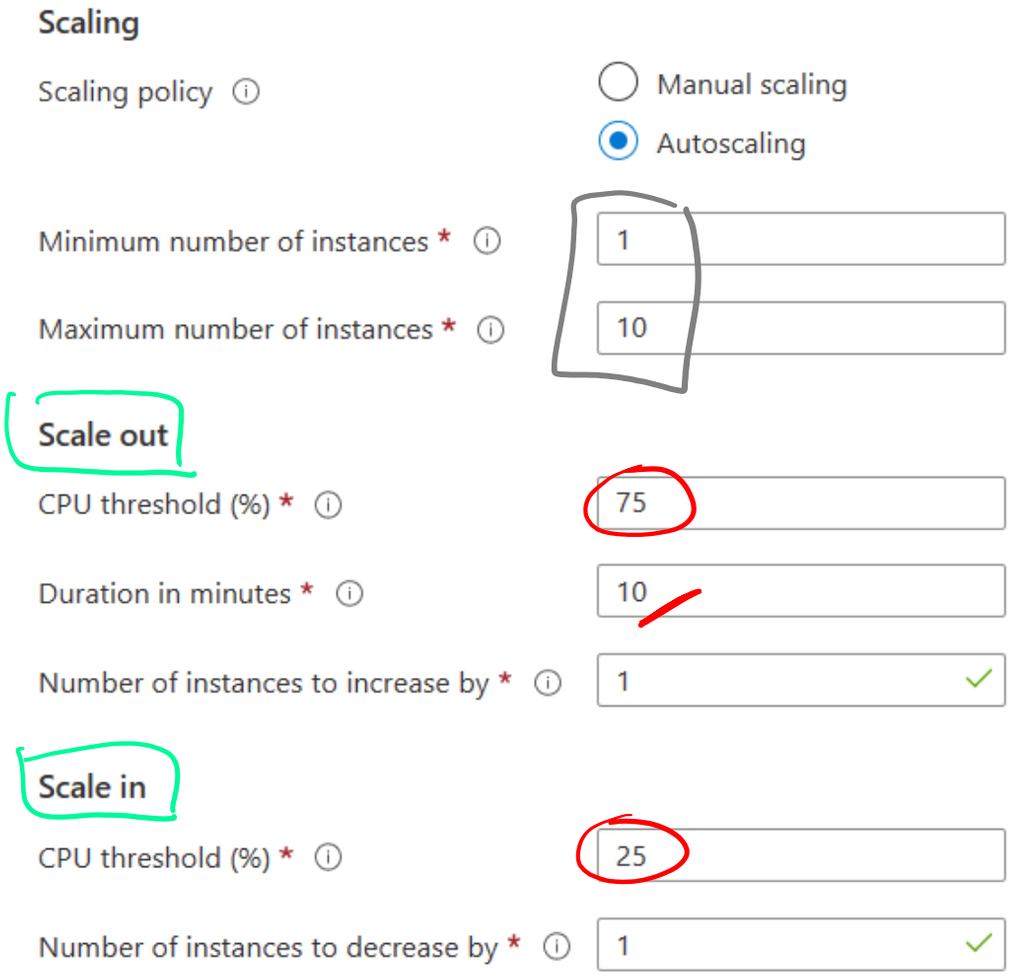
Run with Azure Spot discount ⓘ: [ ]

Size * ⓘ: Standard_D2s_v3 - 2 vcpus, 8 GiB memory ($70.08/month)
See all sizes

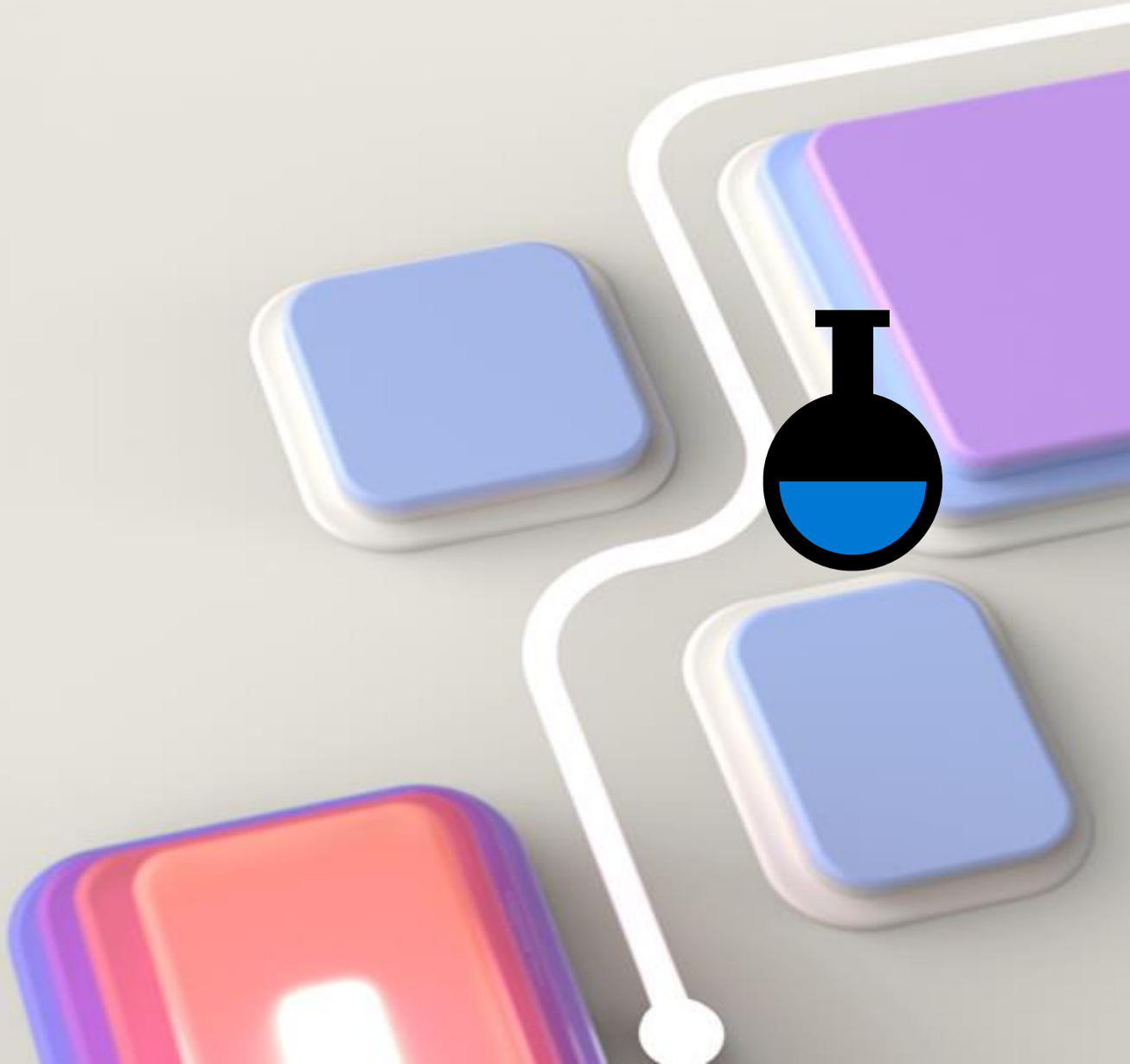
Configure Autoscale

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

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



Lab – Manage Virtual Machines



Lab 08 – Manage Virtual Machines

You are tasked with identifying different options for deploying and configuring Azure Virtual Machines.

Objectives

Task 1: Deploy zone-resilient Virtual Machines

Task 2: Configure Azure virtual machines with extensions

Task 3: Scale Azure virtual machines

Task 4: Register resource providers

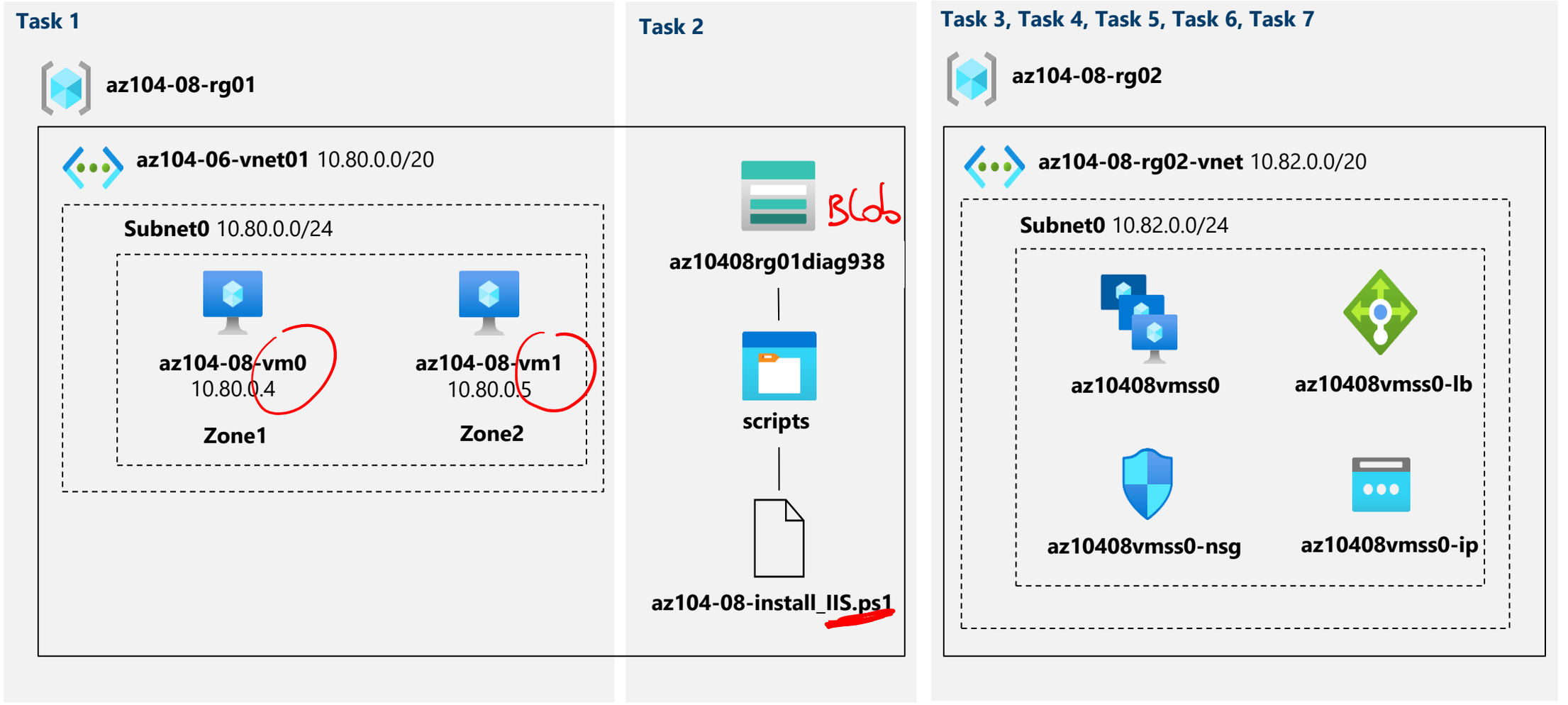
Task 5: Deploy zone-resilient virtual machine scale sets

Task 6: Configure virtual machine scale sets with extensions

Task 7: Scale virtual machine scale sets

Next slide for an architecture diagram

Lab 08 – Architecture diagram



End of presentation