Azure Basic Concepts

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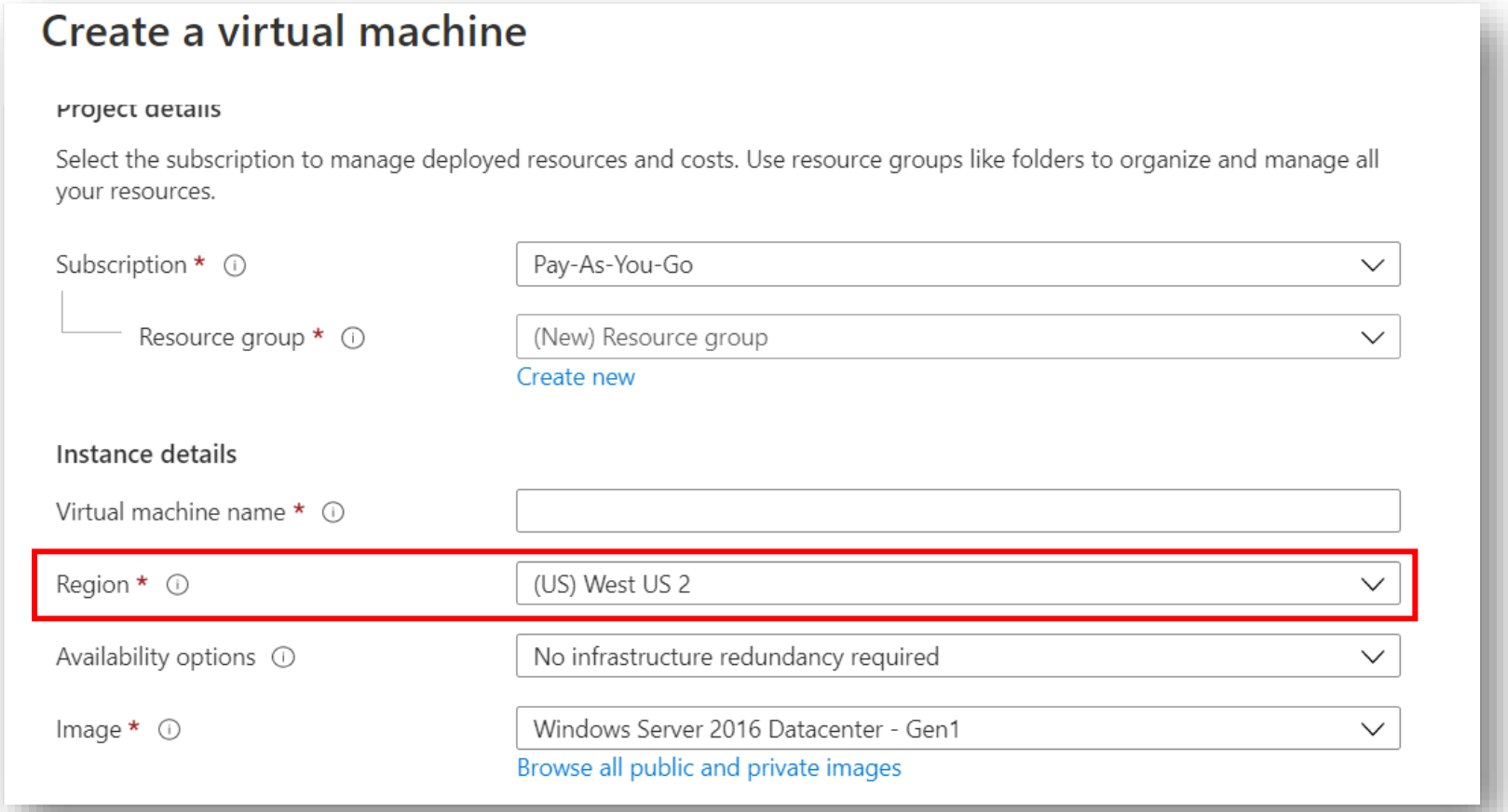
Source: https://azure.microsoft.com/en-us/global-infrastructure/geographies/

Selecting Regions

- Almost every resource in Azure should be placed in a Region



How to Select Region?

- Geographical proximity to system's audience

How to Select Region?

- Services' availability

TABLE KEY: ✓ Generally Available ☐ In Preview ■ In Preview (hover to view expected timeframe) ◴ Future availability (hover to view expected timeframe)

		CANADA		UNITED STATES						
Products	Non-regional ⓘ	Canada Central	Canada East	Central US	East US	East US 2	North Central US	South Central US	West Central US	West US
Azure Functions		✓	✓	✓	✓	✓	✓	✓	✓	✓
Consumption plan		✓	✓	✓	✓	✓	✓	✓	✓	✓
Consumption plan Linux		◴		✓	✓	✓	✓	✓		✓
Premium plan		✓		✓	✓	✓	✓	✓	✓	✓
Premium plan Linux		✓		✓	✓	✓	✓	✓	✓	✓
Event Grid		✓	✓	✓	✓	✓	✓	✓	✓	✓

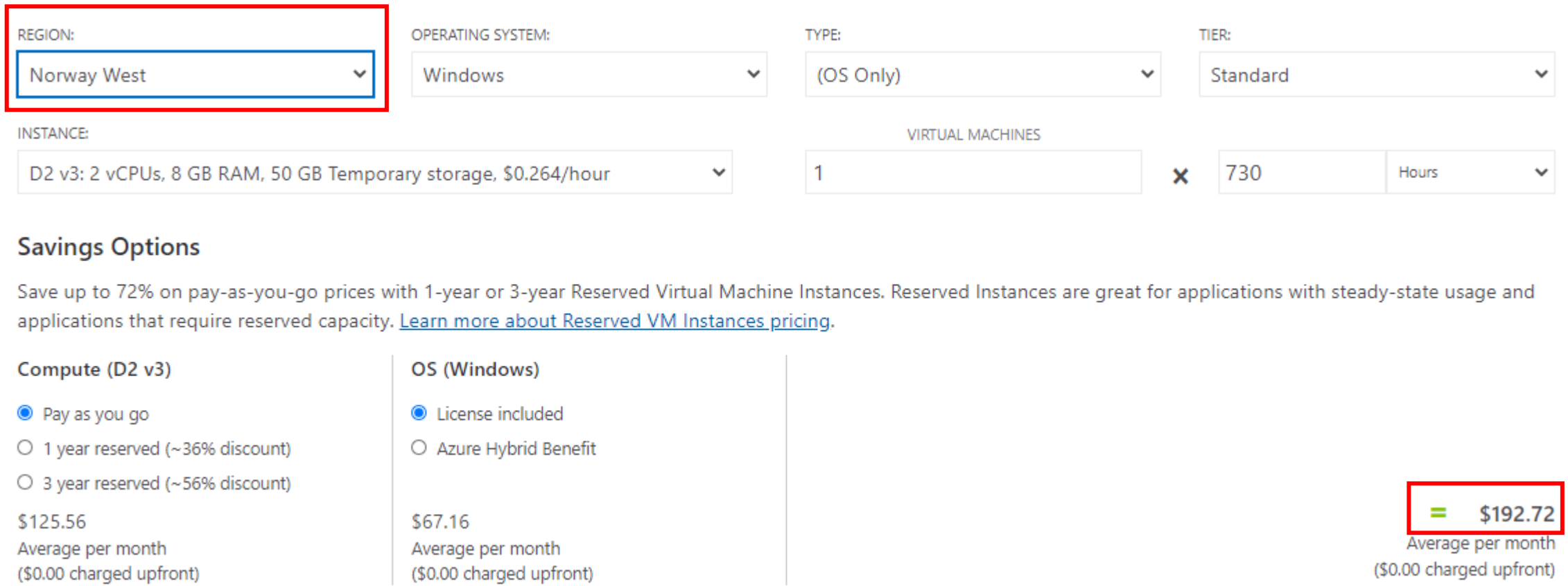
Source: https://azure.microsoft.com/en-us/global-infrastructure/services/

How to Select Region?

- Availability Zones

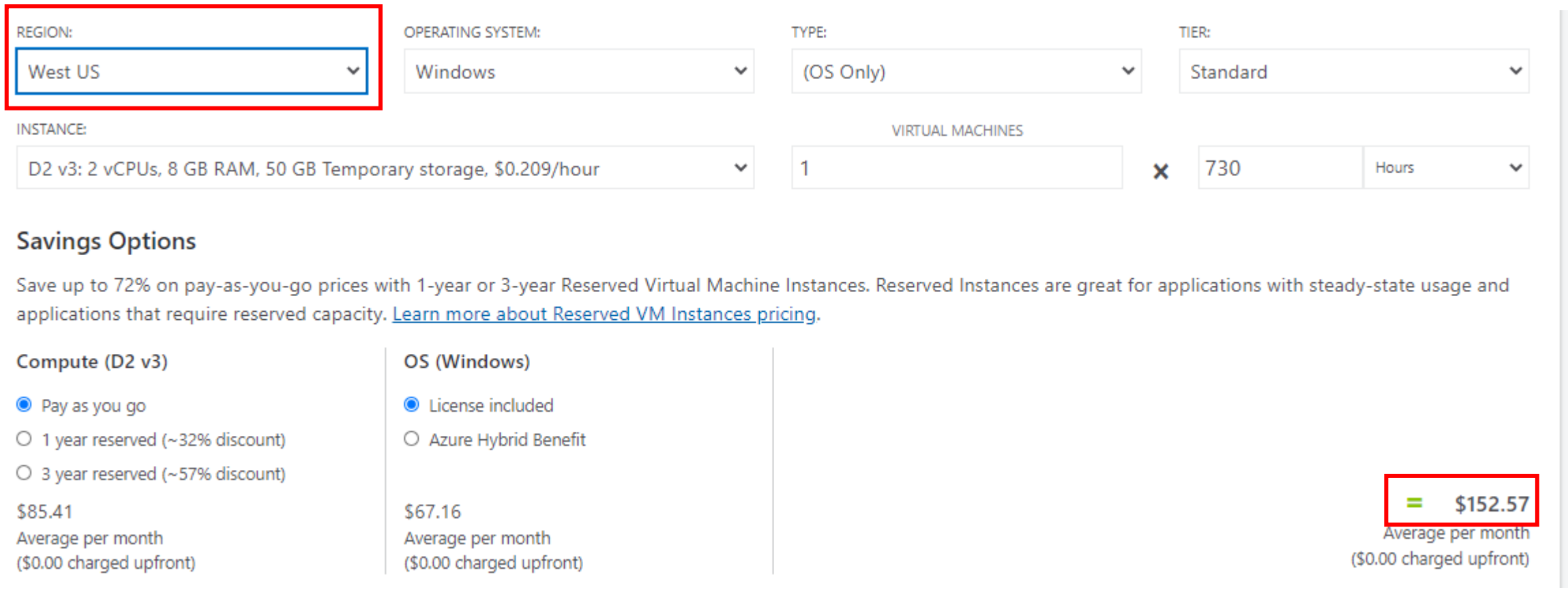
How to Select Region?

- Pricing



How to Select Region?

- Pricing



Resource Groups

- A logic container for resources
- Used for grouping resources by a logic boundary
- Free
- Examples:
  - Development / Test / Production resources
  - Team A resources

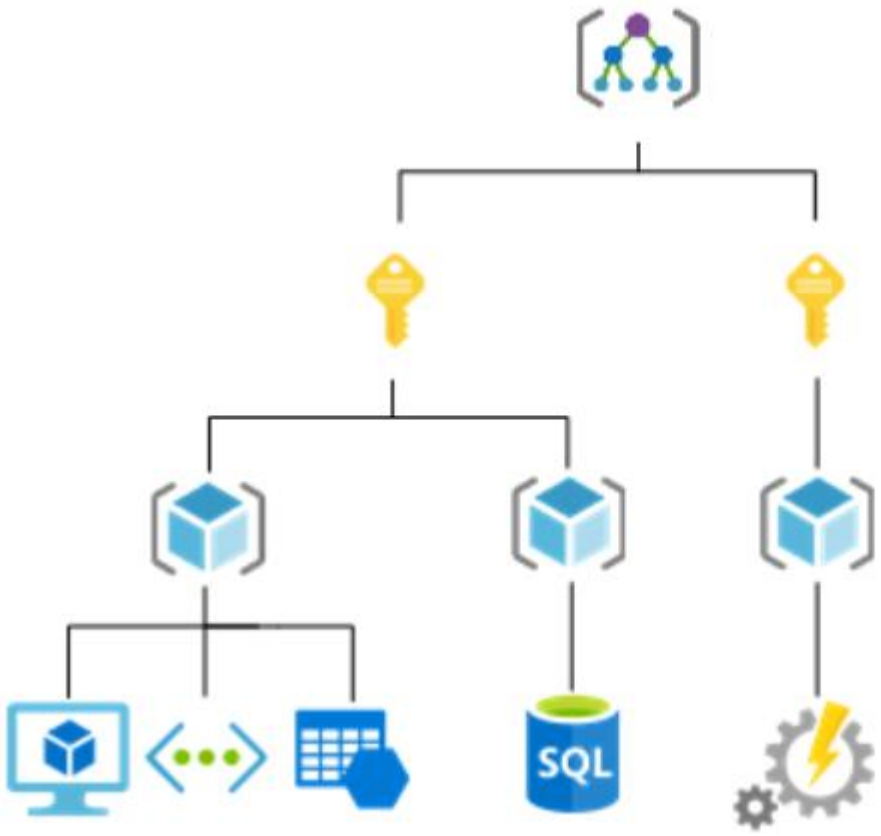
Resource Groups vs Subscriptions

Subscription

Logical Container

Contains the various resources you provision in the cloud (VMs, DBs, networks etc.)

Resource Groups vs Subscriptions



Management groups ← - Manages Subscriptions

Subscriptions ← - Associates accounts
- Cost center

Resource groups ← - Logical Resources Container

Resources

Source: https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/ready/azure-setup-guide/organize-resources?tabs=AzureManagementGroupsAndHierarchy

Resource Groups Naming Conventions

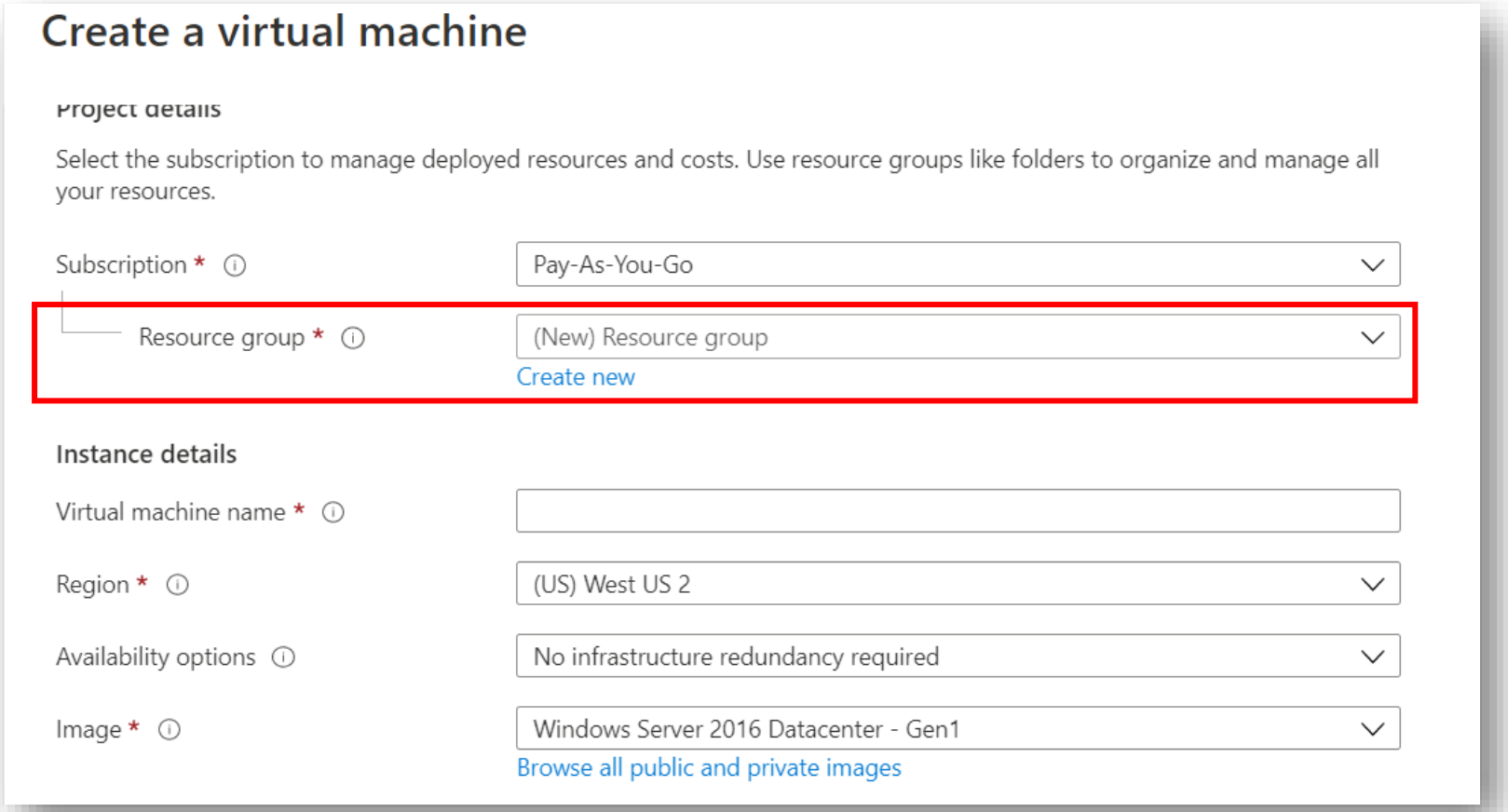
- It's best practice to have an "rg" or "RG" as part of the resource group name
- Could be prefix or suffix

```
RG-Project-Dev

Finance-Resources-rg
```

Resource Groups

- Almost every resource in Azure is placed in a Resource Group



Storage Account

- Used to store almost anything in Azure
- Used transparently by various services
- For example:
  - Database backups
  - VM Disks
  - Diagnostics data

Storage Account

- Used also for explicit data storage
- We'll discuss it later…
- Quite cheap

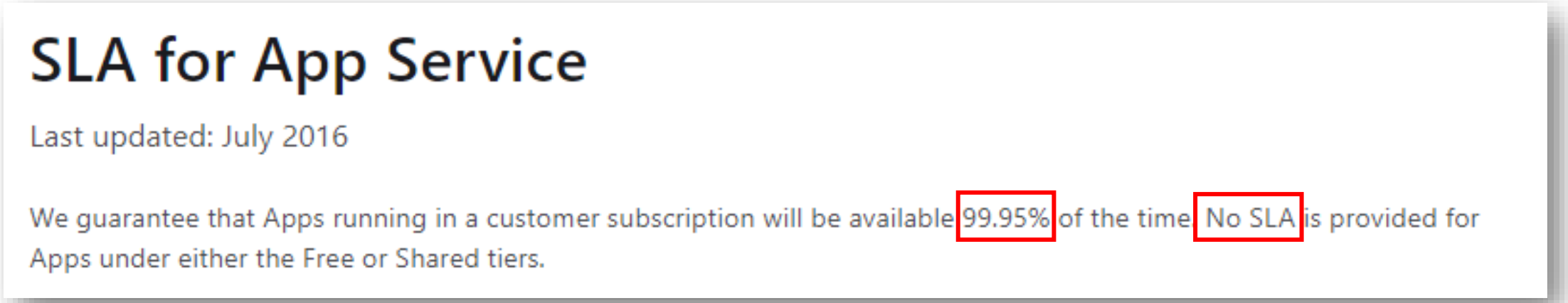
SLA

- Service Level Agreement
- The uptime % of a cloud service

SLA (%)	Yearly Downtime Allowed
95	18d 6h 17m 27s
99	3d 15h 39m 29s
99.9	8h 45m 56s
99.99	52m 35s

SLA

- ALWAYS check the SLA of the service used



SLA for App Service

Last updated: July 2016

We guarantee that Apps running in a customer subscription will be available 99.95% of the time. No SLA is provided for Apps under either the Free or Shared tiers.

SLA

- ALWAYS check the SLA of the service used

SLA for Azure SQL Database

Last updated: July 2019

Azure SQL Database is a fully managed relational database with built-in regional high availability and turnkey geo-replication to any Azure region. It includes intelligence to support self-driving features such as performance tuning, threat monitoring, and vulnerability assessments and provides fully automated patching and updating of the code base.

- Azure SQL Database Business Critical or Premium tiers configured as Zone Redundant Deployments have an availability guarantee of at least 99.995%.
- Azure SQL Database Business Critical or Premium tiers not configured for Zone Redundant Deployments, General Purpose, Standard, or Basic tiers, or Hyperscale tier with two or more replicas have an availability guarantee of at least 99.99%.
- Azure SQL Database Hyperscale tier with one replica has an availability guarantee of at least 99.95% and 99.9% for zero replicas.

SLA Calculation

- To get the actual system SLA, multiply the SLAs of the participating services

  App Service SLA = 99.95%

  Azure SQL SLA = 99.99%

  Actual SLA = 99.95 X 99.99 = 99.94% = 5h 15m 34s annual downtime

Cost

- Almost everything in the cloud costs money
- Few pricing models:
  - Per resource (ie. VM)
  - Per consumption (ie. Function Apps)
  - Reservations

Cost

- ALWAYS check resource's cost before provisioning
- Check for more cost-effective alternatives
- Look for reservations when available and relevant

Azure Calculator

https://azure.microsoft.com/en-us/pricing/calculator/

Architects and the Cloud

- Software Architects designing regular system need to know:
  - Non-Functional Requirements
  - Technology Stack
  - Component's Architecture
  - Communication Patterns

Architects and the Cloud

- Cloud-based systems require, in addition:
  - Infrastructure knowledge
  - Security
  - Hands-on
- We'll learn all that in this course ☺