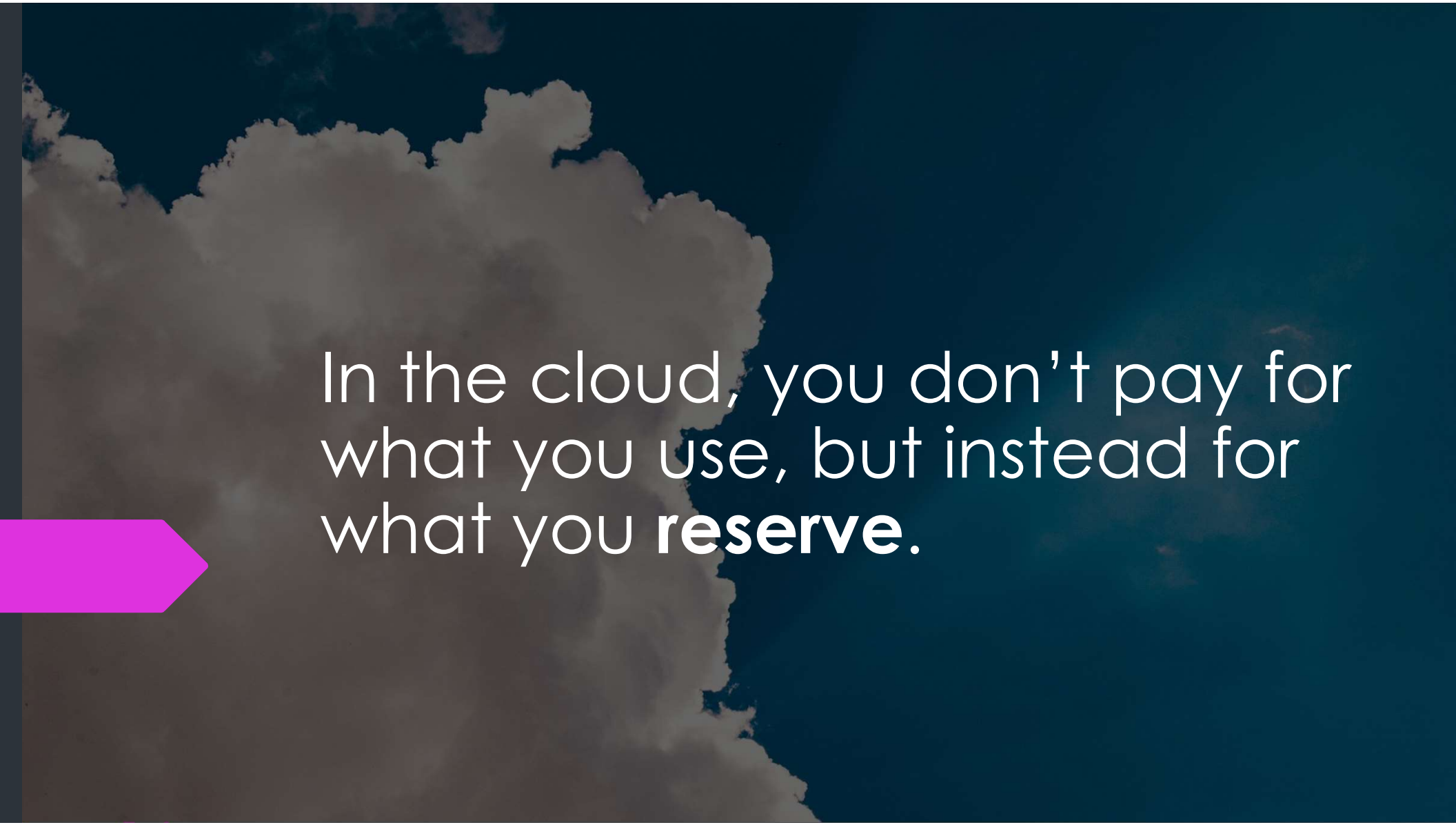
Azure (Serverless) for JavaScript/TypeScript Folks

Douglas Starnes

Connect.Tech 2022

Why is the cloud awesome?

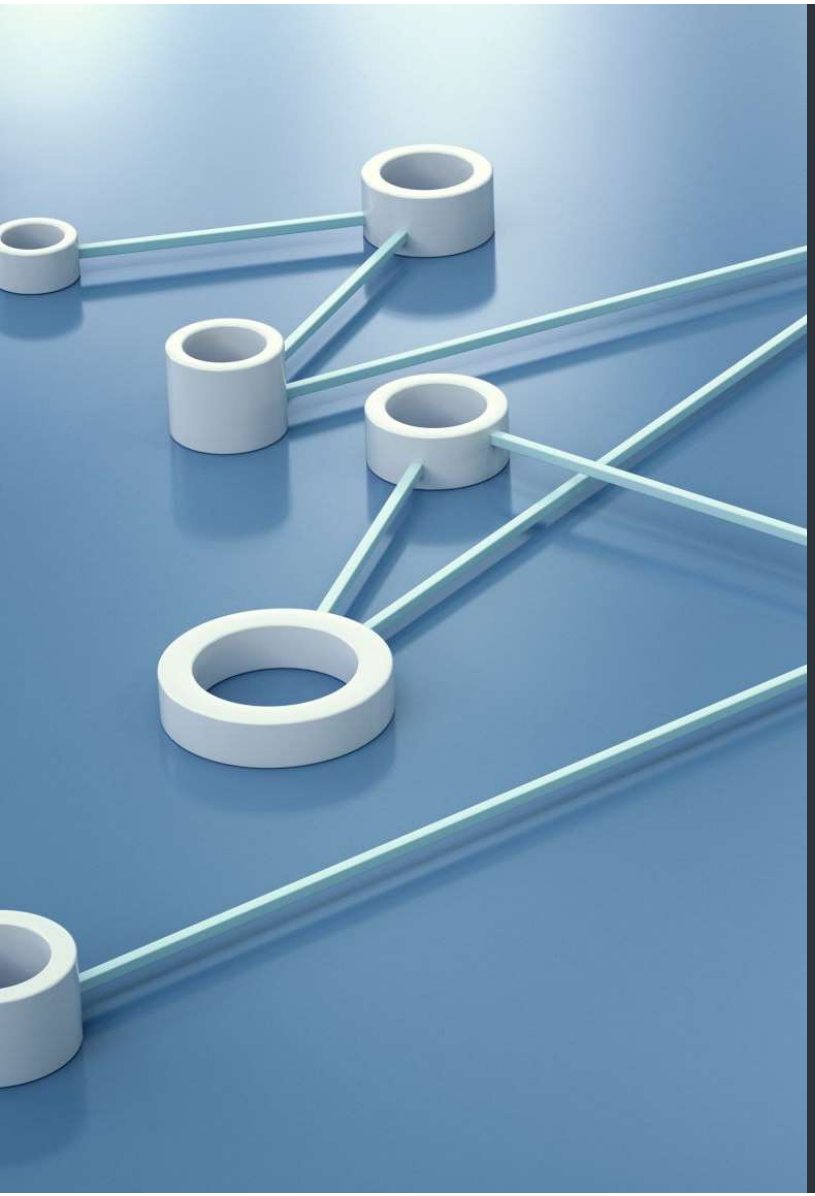
- You only pay for what you use!
- When Azure was new, it was not the polished product we enjoy today
- It was slow, clunky and difficult to use
- Thus many developers didn't get past 'Hello World'
  - (and didn't shut it down)
- And received $$$ invoices for it even though the application wasn't doing anything


In the cloud, you don’t pay for what you use, but instead for what you **reserve**.

Obligatory Narcissism Slide *(who is this guy?)*

- Hi! I'm Douglas!
- From Memphis, TN area
- Professional Explainer
  - Technical Author (Pluralsight)
  - Speaker
- Community
  - Memphis Python User Group
  - Scenic City Summit
  - TDevConf
- 3x Microsoft Most Valuable Professional (Python)

- This is an Azure first talk
- It started out a year ago as a talk about the ‘Power Triumvirate’ of Python, Azure, and Visual Studio Code
- Since then it has been adapted for .NET (C#) and JavaScript / TypeScript
- Most of the **concepts** are applicable to other supported languages
- The (limited) code samples are in JavaScript / TypeScript



Serverless

- Reduces complexity
- Shifts infrastructure burden
- Cost effective
- Focus on the code that makes your application unique

Azure Serverless Products

- Compute
  - Azure Functions
  - Azure Container Apps
- Databases
  - Azure Cosmos DB
  - Azure SQL Database
- AI
  - Azure Bot Service
  - Azure Cognitive Services
- Azure API Management
- Azure Logic Apps
- Azure Event Grid
- Azure Blob Storage

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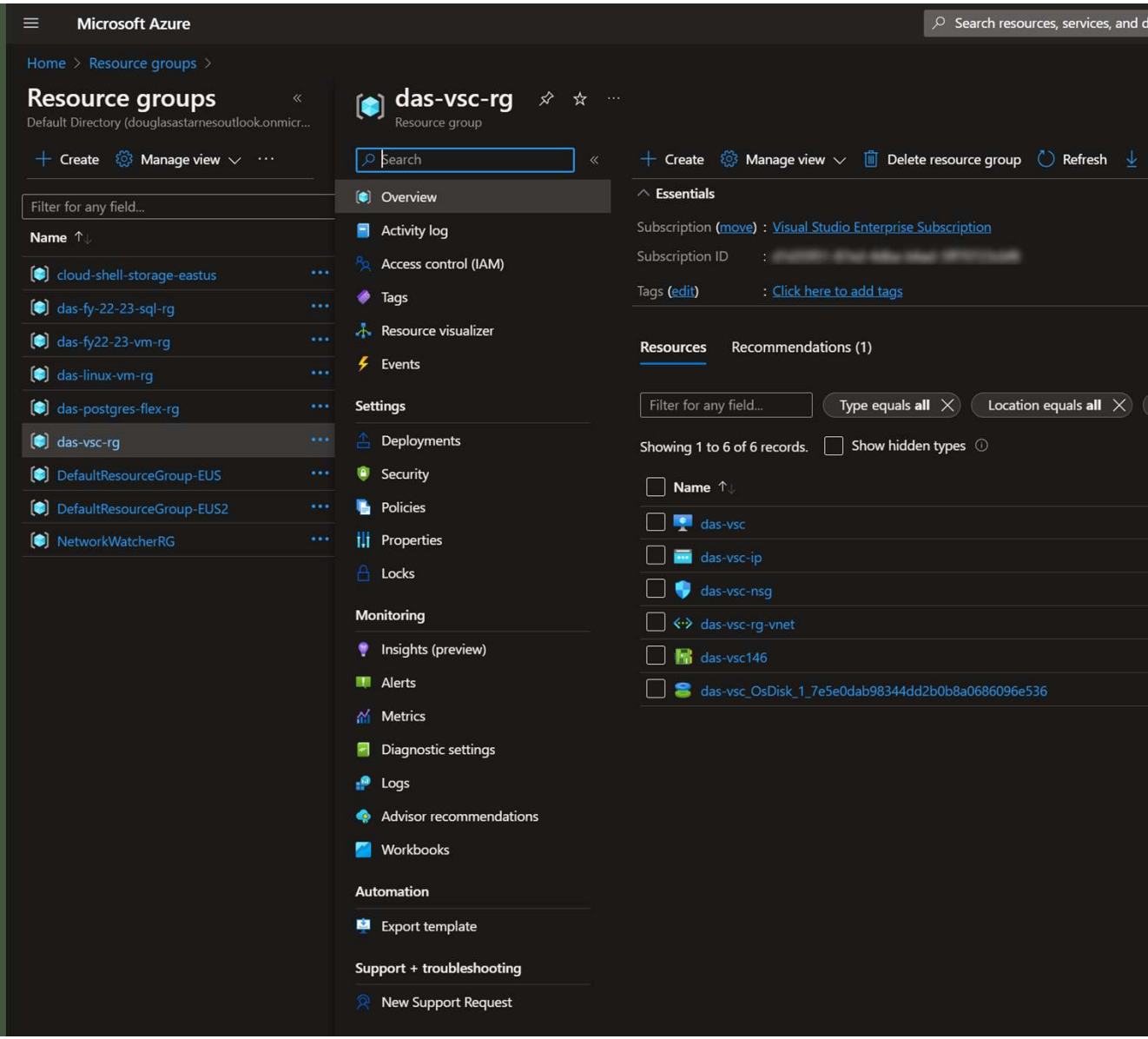
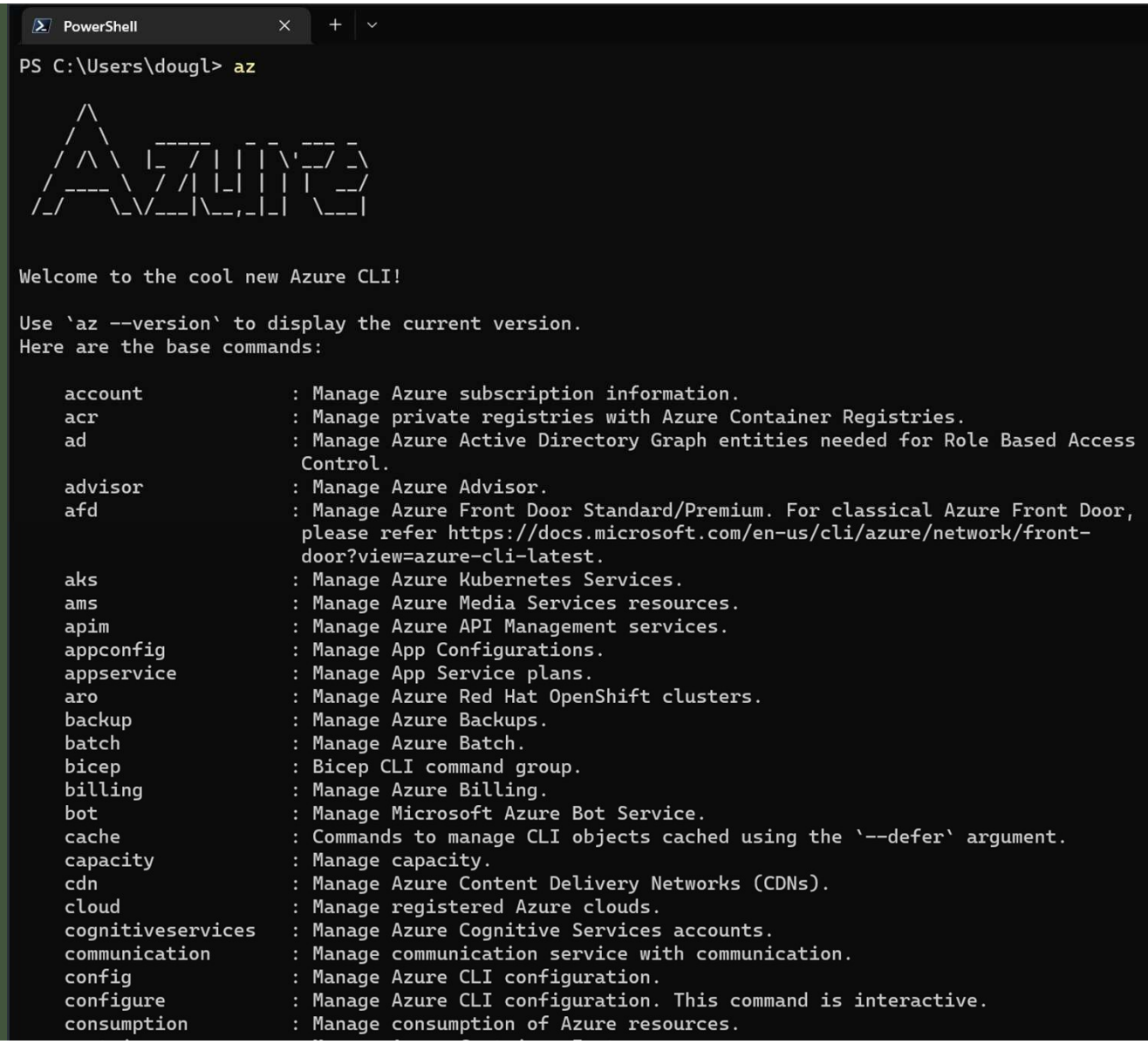
Tooling
Web Portal

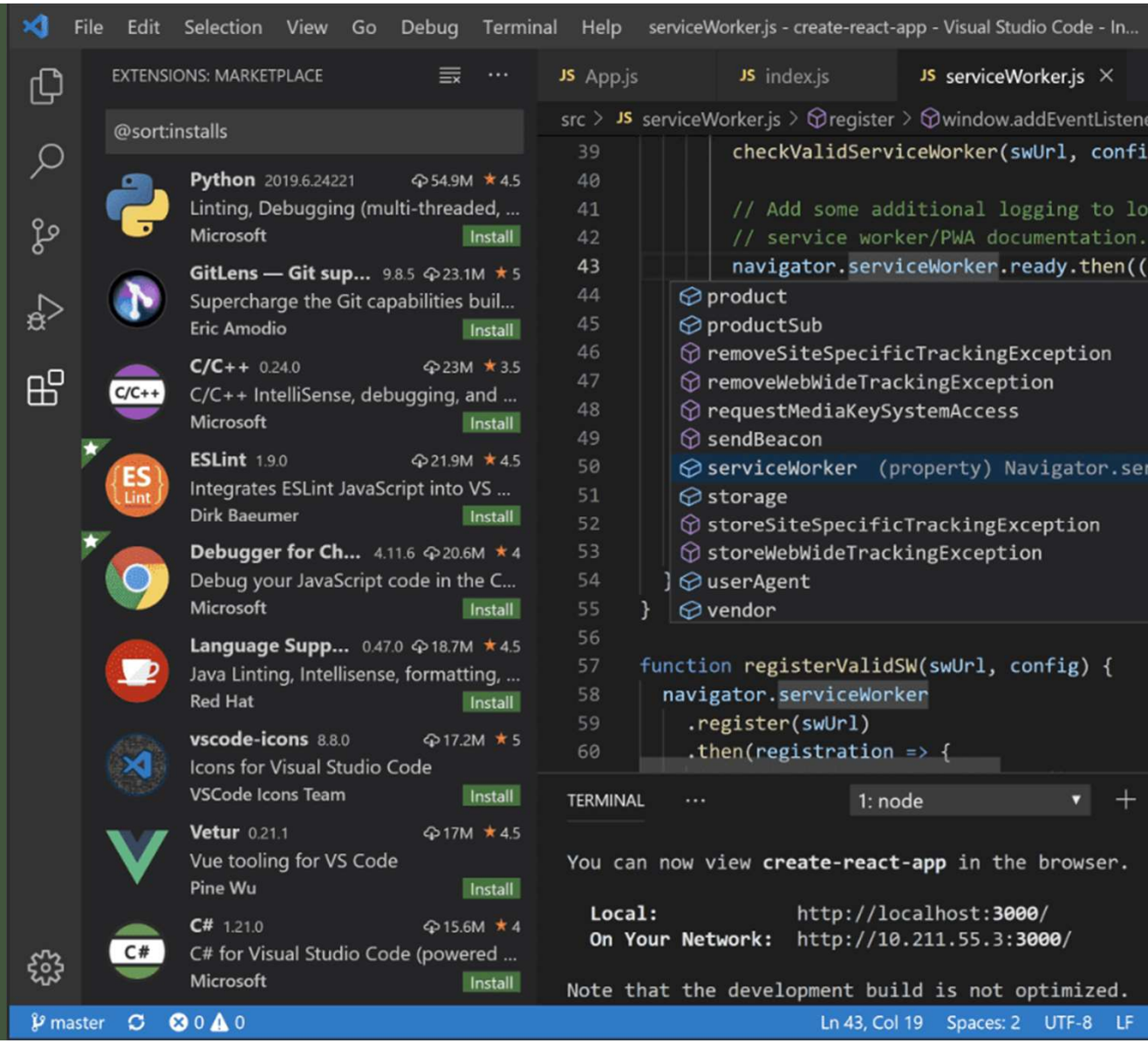


Tooling
Command Line



Tooling

Visual Studio Code



Azure Functions

- A function in Azure is similar to a function in JavaScript
  - Narrow scope
  - Executes quickly
- The deployed code does not implement an entire application
- You are charged only for the resources consumed when the function is being executed
- You are not charged for provisioning and deployment

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Function Triggers

- An Azure Function is executed in response to a **trigger** (event)
  - HTTP request
  - Timer
  - Cosmos DB document change
  - Blob storage upload

Function App Plans

Consumption	Charged for resources consumed while function executes Auto-scaling

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Premium	Pre-warmed instances Longer time outs
Dedicated	Runs in an Azure App Service instance Good if you have Azure App Service web deployments

Azure Functions Pricing

Consumption

$0.000016/GB-s

$0.20 / 1M executions

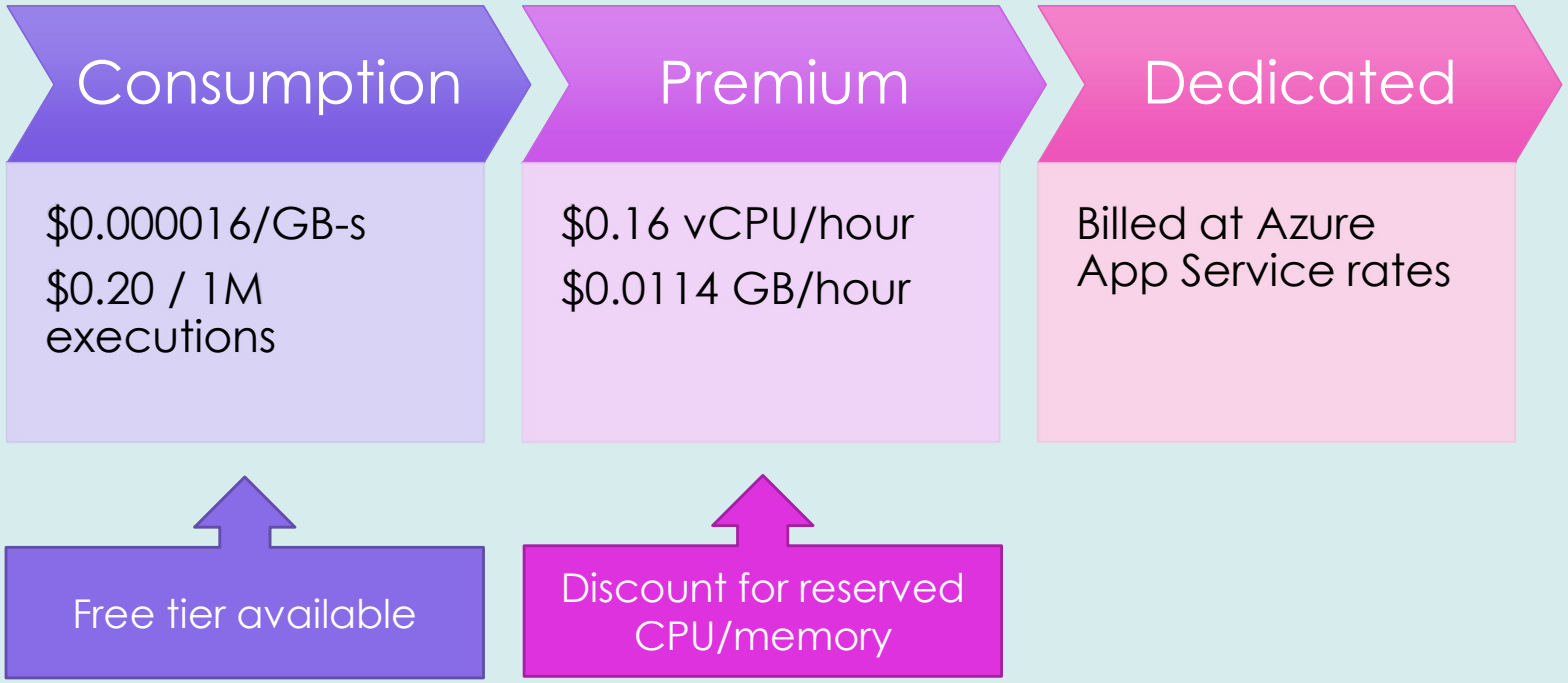
What the heck is a GB-s?

A gigabyte-second is the compute required to use 1 gigabyte of memory for 1 second

number of seconds executed * memory required

ex. A function that runs for 10 seconds and requires 512MB (0.5GB) of memory will be charged for 5 GB-s

Azure Functions Pricing



Sidebar: Quicksort

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This is the fastest known sorting algorithm

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(*) At around 20-30 elements an insertion sort is generally faster

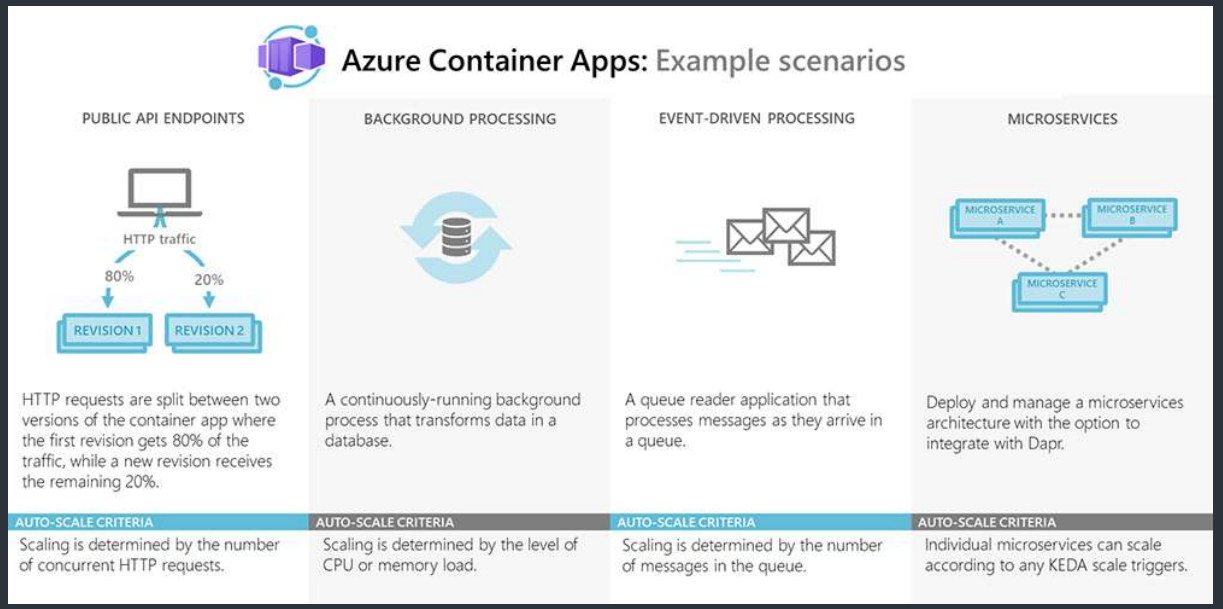
Sometimes the simplest ideas are the best!

- What could be simpler (for deployment) than a container?
  - If it works on the development machine in a container, it will work when deployed to a production server in a container
- Prior to serverless, containers were deployed to Azure using Azure Kubernetes Service
- But Azure Kubernetes Service has a major drawback ...

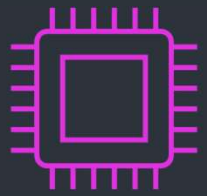
You are required to use Kubernetes!

Azure Container Apps

- Build Kubernetes-style serverless applications with containers, without using Kubernetes



Azure Container Apps Pricing



vCPU

Active Price: $0.000024/second

Idle Price: $.000003/second

Memory

$0.000003 GB-s

- Active apps are starting or processing requests
- Idle apps are started but not processing requests
- Apps scale to zero by default
- Prices do not include Azure Container Registry or other resources required by the container

Yes!
There is a free tier!

Azure Cosmos DB

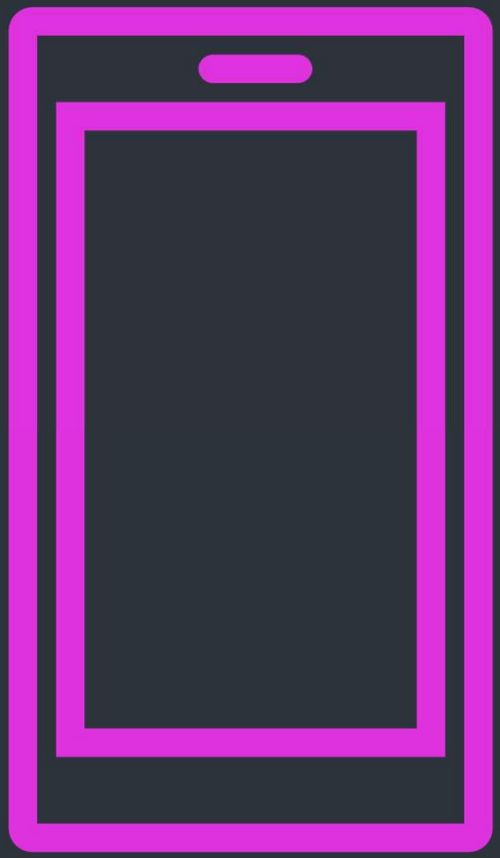
- Massively scalable globally distributed datastore
- Fast – single digit millisecond reads
- 99.999% uptime
- Multi interface
  - Core (SQL)
  - MongoDB
  - Cassandra
  - Gremlin (Graph)
  - Azure Tables
  - New! – PostgreSQL
- Operations Models
  - Provisioned Throughput
  - Serverless
  - vCores

Azure Cosmos DB Pricing

- Provisioned Throughput
  - Single Region Writes - $0.008 per hour per 100/RUs
  - Multi Region Writes - $0.016 per hour per 100/RUs
  - Reserved capacity pricing
- Serverless
  - $0.282 per 1 million RUs
- vCores
  - Hourly rates

Connected Mobile Apps

- Hey! That's a neat idea!
- There is a practical use for this!
- If your app doesn't use this, you're an outlier!



Artificial Intelligence

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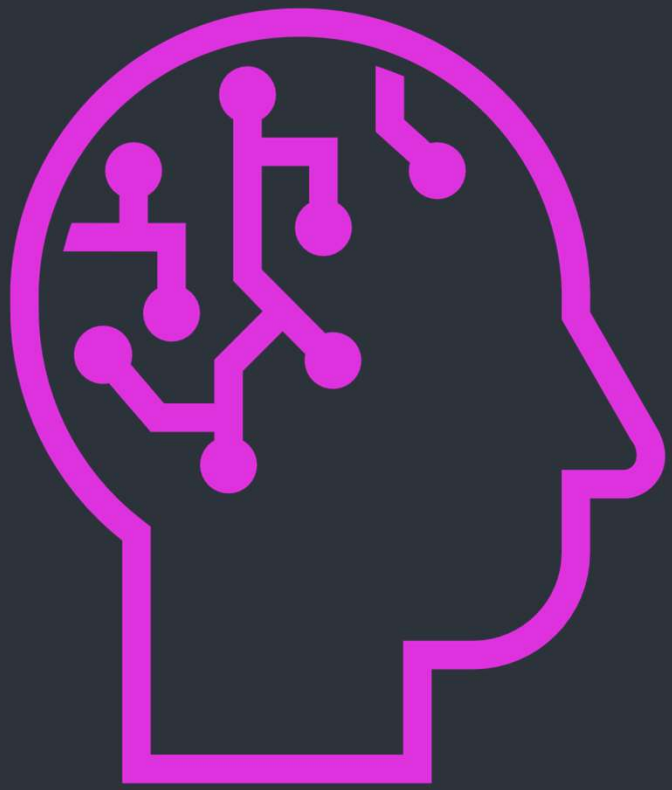

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- Common AI tasks (ie. facial detection, sentiment analysis)
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- SDKs for popular languages (include JavaScript / TypeScript)
- If you can call a REST API (or use an SDK) you can use AI in your app!

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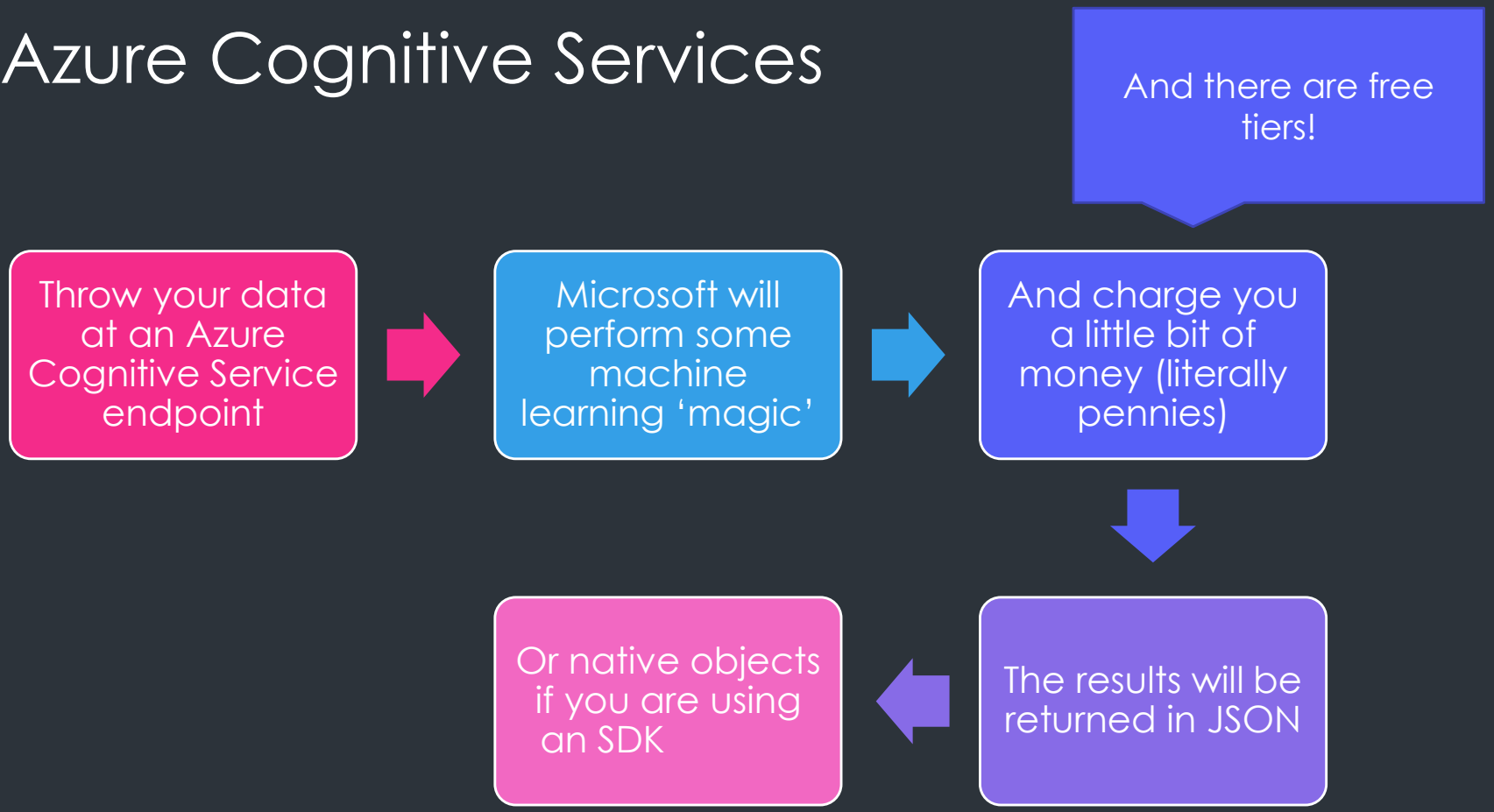

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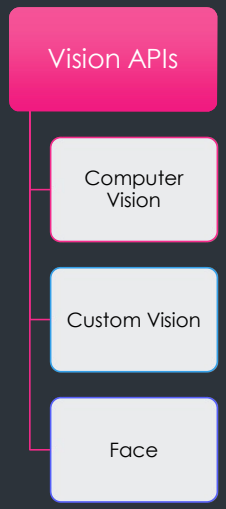

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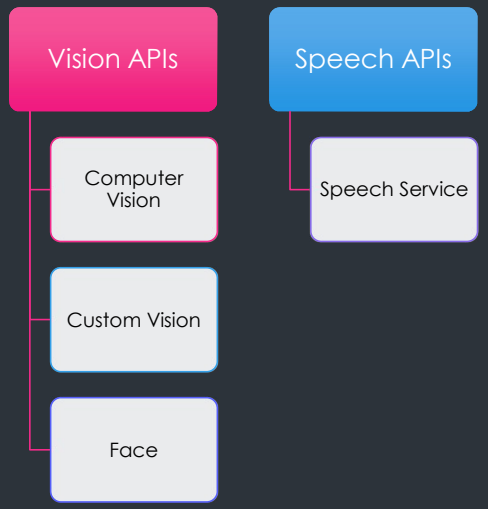

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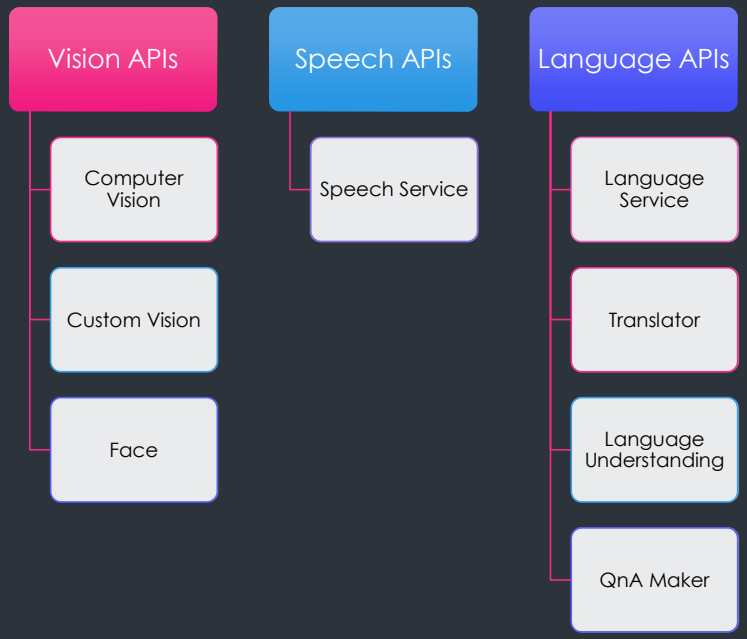

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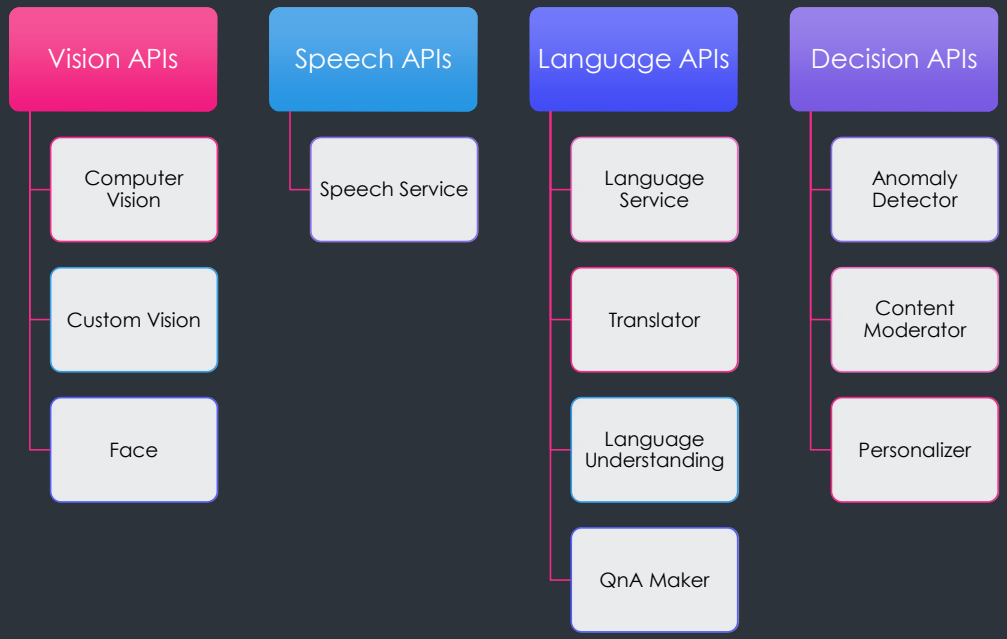

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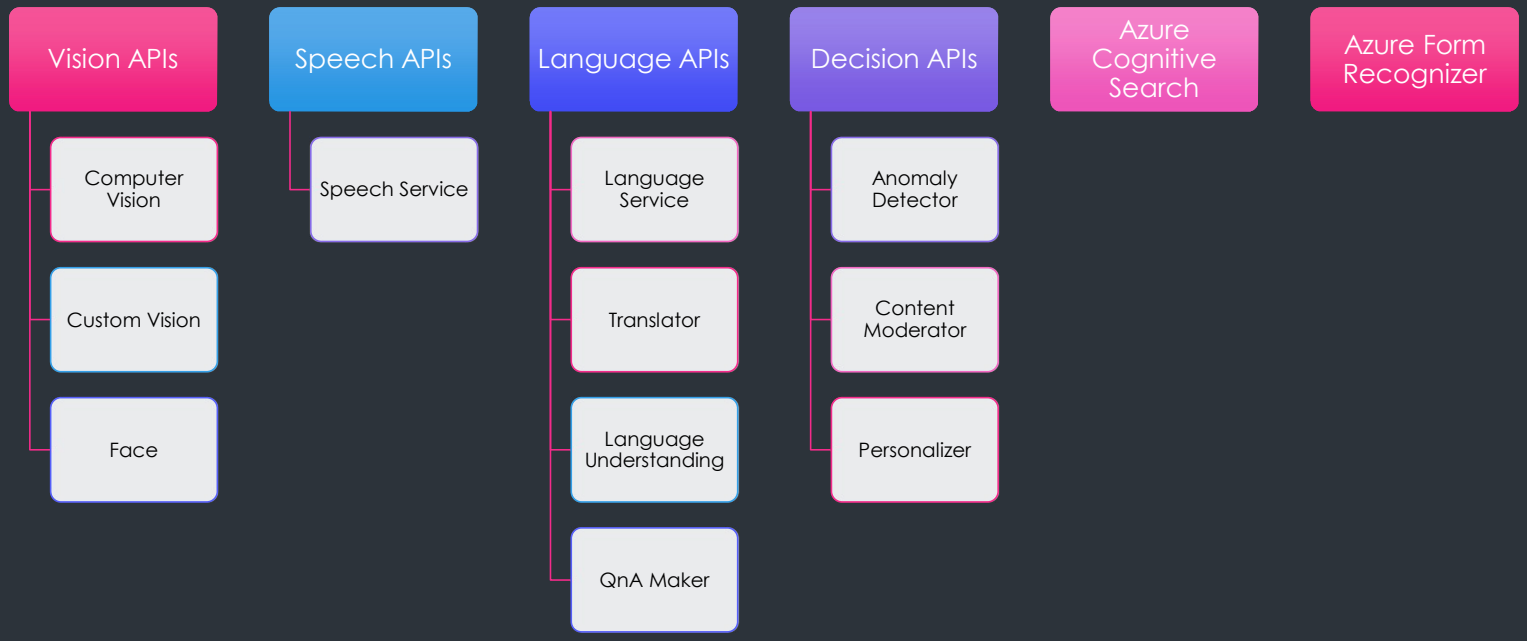

Azure Cognitive Services Pricing

Face API

- 0-1 million transactions - $1 per 1000
- 1-5 million transactions - $0.80 per 1000
- 30K per month free

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Text Analytics

- 0-0.5 million text records - $1 per 1000
- 0.5-2.5 million text records - $0.75 per 1000
- 5000 text records free for 12 months

DEMOS

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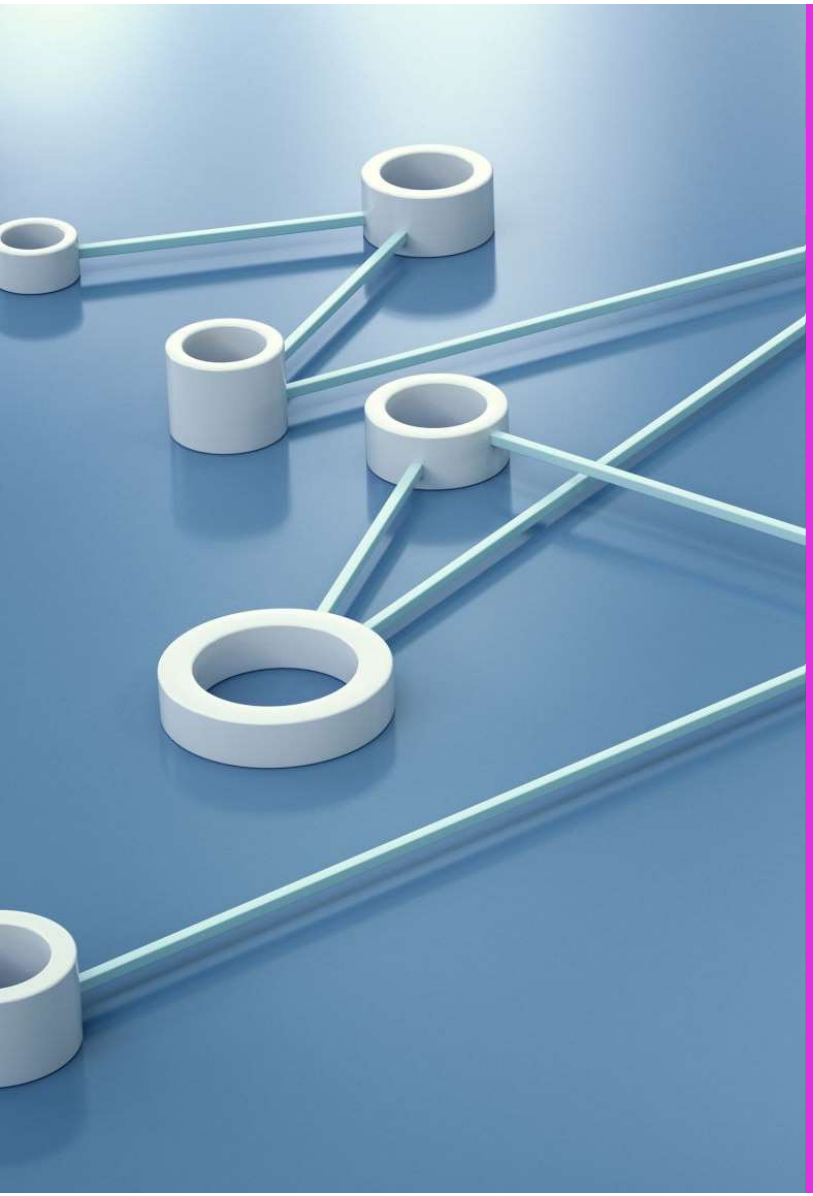

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Thank You!

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