Google Cloud Next

ASP.NET ontwikkeling op Google Cloud Platform

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Matt Feigal

Solutions Engineer, Google Cloud Platform

Java, Android, Python, others… (objective-C!)
VB, ASP and ASP.NET v1, C#

@mattfgl
#windowsongcp #googlenext17

Great time to be
a .NET developer!

Agenda

Introduction

Why Windows, ASP.NET, SQL Server on Google Cloud?

Move existing ASP.NET apps to Google Cloud

Tools and integration, Deployment options (IaaS vs CaaS vs PaaS), SQLServer

Travix: real world experience

CI/CD, containers vs VMs, production, impact on development team and business

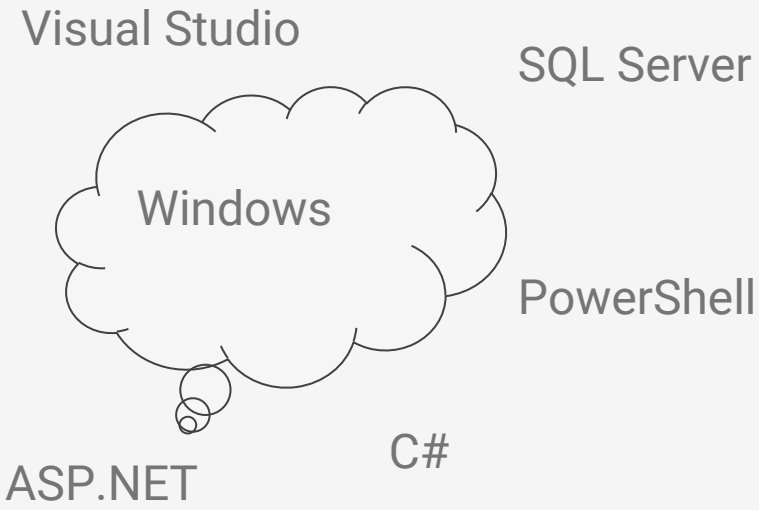
Hands-on Lab

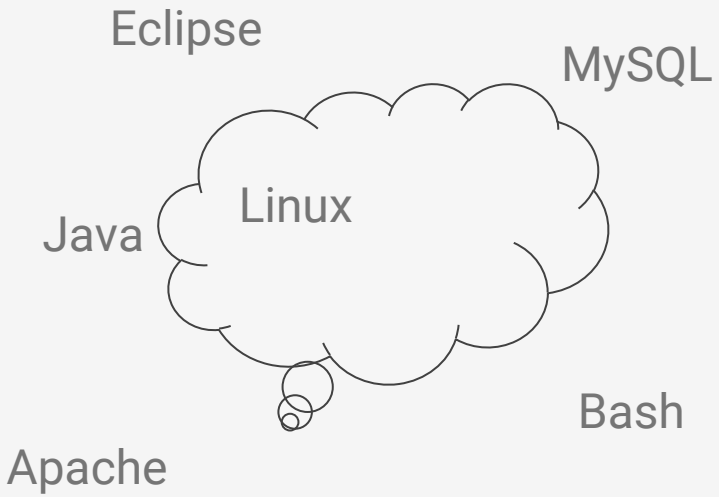
Build a .NET Core container, deploy it

Introduction

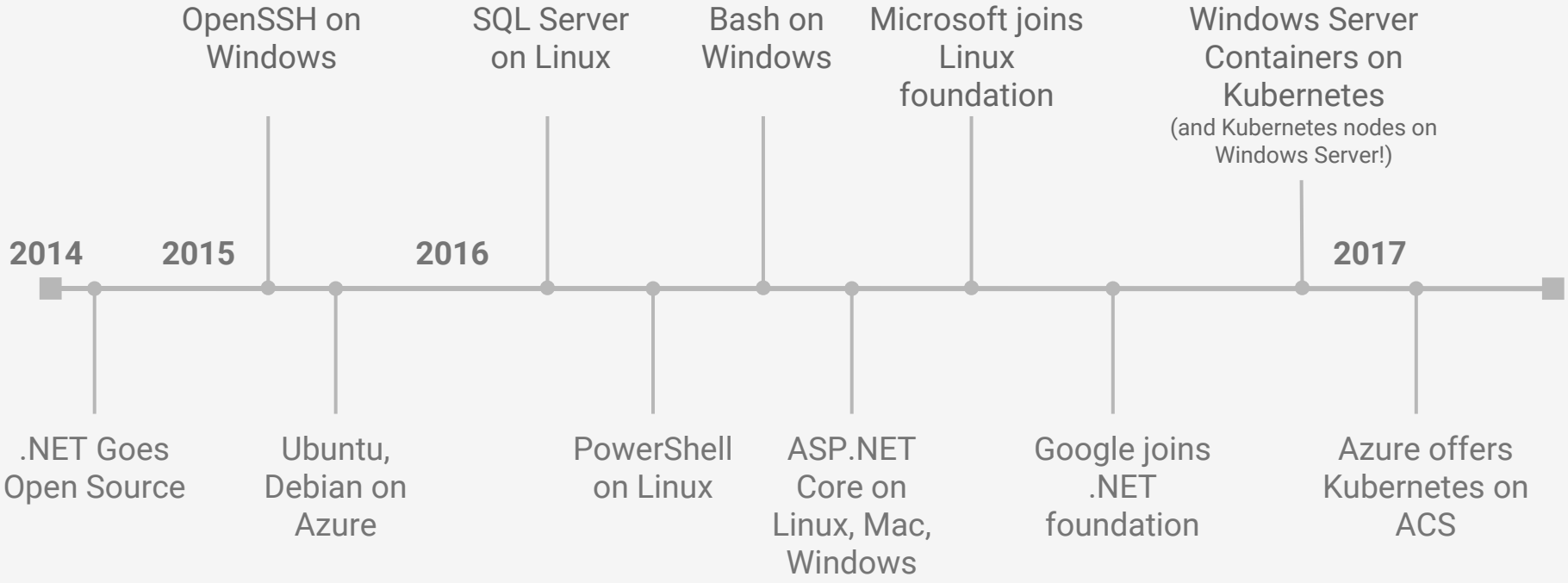
Windows Server, SQL Server, ASP.NET on Google Cloud?

The world of 2014





Things are changing



The convergence

Why deploy to Google Cloud?

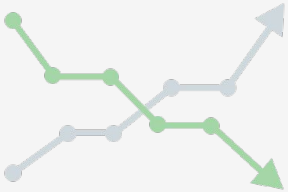
Google's Infrastructure

Google's privately owned fiber network

Fast VM provisioning

Autoscale that just works

Price

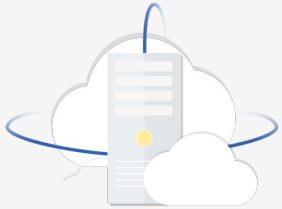


Per minute billing

Sustained use discount: Up to 30% lower cost

Sizing recommendations

Flexibility in machine types



Custom VMs: Flexibility in CPU and Memory

Preemptible VMs: Up to 80% lower cost than regular instances

Why deploy to Google Cloud?

Deployment Options

Compute Engine
Container Engine
App Engine
Cloud Functions

Managed Services

BigTable
Datastore
Dataflow
Pub/Sub
Stackdriver
BigQuery
Cloud SQL
Spanner
Genomics
Storage

Machine Learning

Vision API
Natural Processing API
Translation API
Speech API (Beta)
TensorFlow on Cloud
Machine Learning

Moving existing ASP.NET apps

ASP.NET Deployment Options

ASP.NET on Windows

Compute Engine

ASP.NET Core on Linux

App Engine
flexible environment

Container
Engine

ASP.NET on Windows (one method)

Windows instance bootstrap

Google Cloud PowerShell

GCE Windows Server Core image

Script injected at first boot

(or just use the VS Plugin)

```
$disk = Get-GceImage `
  -Project 'windows-cloud' `
  -Family 'windows-2016-core'

$metadata = @{
  'sysprep-specialize-script-ps1' = ...
  'windows-startup-script-ps1' = ...
  'windows-shutdown-script-ps1' = ...
}

Add-GCEInstance -Name 'demo1' `
  -BootDiskImage $disk `
  -MetaData $metadata

Get-GceInstance demo1 -SerialPortOutput
```

ASP.NET Core on AppEngine

ASP.NET Core can run inside Docker containers which means it can run on App Engine as well!

All of a sudden, ASP.NET apps get benefits of running on App Engine:

- Autoscaling
- Versioning
- Traffic splitting
- Dashboards

ASP.NET Core on Kubernetes

ASP.NET Core can run inside Docker containers which means it can be managed by Kubernetes on Container Engine

All of a sudden, ASP.NET apps get benefits of being managed by Kubernetes on GKE:

- Reliable deployments
- Resilience, redundancy
- Reliable rollout and rollbacks
- Health checks, graceful shutdowns

Portable between Kubernetes deployments (GKE, ACS, on-prem)

SQL Server, Libraries and Tools

Microsoft SQL Server

Compute Engine

Visual Studio plugin for Google Cloud on Visual Studio Gallery

.NET libraries for Google Cloud on NuGet

PowerShell cmdlets for Google Cloud as part of Google Cloud SDK

Cloud SDK and Client Libraries for .NET

Google Cloud SDK for Windows (gcloud)
Google Cloud Client Libraries for .NET (new)
Google API Client Libraries for .NET

Google Cloud SDK for Windows

https://cloud.google.com/sdk/docs/quickstart-windows

The Cloud SDK is a set of tools for Cloud Platform

Contains **gcloud**, **gsutil**, and **bq**, which you can use to access Google Compute Engine, Google Cloud Storage, Google BigQuery, and other products and services from the command-line

gcloud is the main tool to set up projects, authentication and much more

Google Cloud Client Libraries for .NET

https://googlecloudplatform.github.io/google-cloud-dotnet/

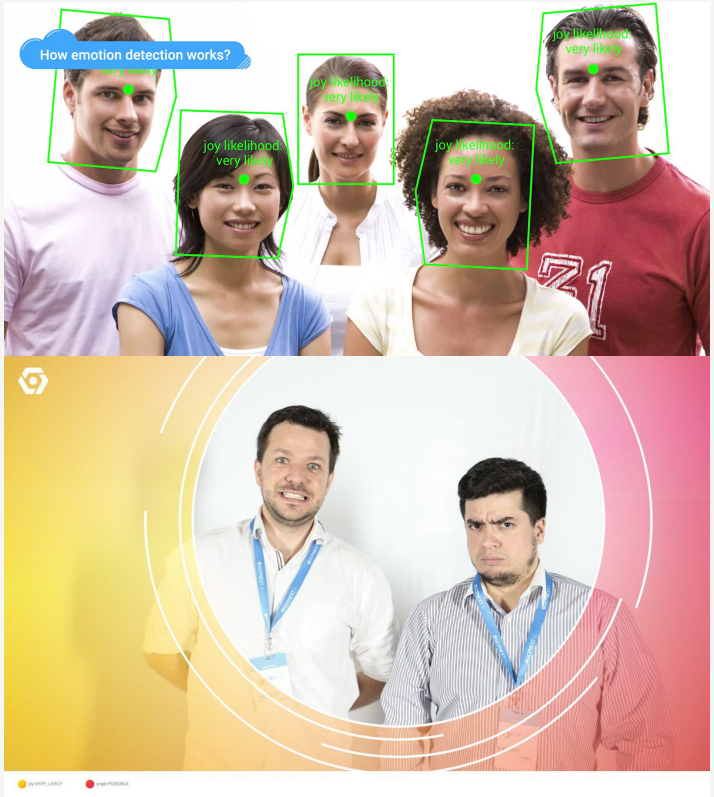
New idiomatic and preferred .NET client libraries to integrate with many of Google Cloud Platform services

Libraries for BigQuery, Datastore, Pub/Sub, Storage, Vision, Logging, etc are available on NuGet

Client Library Example: Vision API

https://googlecloudplatform.github.io/google-cloud-dotnet/

```
using Google.Cloud.Vision.V1;
namespace ContosoUniversity.Services
...
public async Task<bool> IsSafe(HttpPostedFileBase postedFile)
{
        var image = await Image.FromStreamAsync(postedFile.InputStream);
        var annotation = await _client.DetectSafeSearchAsync(image);
        // Each category is classified as Very Unlikely, Unlikely, Possible, Likely or Very Likely.
        return annotation.Adult < Likelihood.Possible
        && annotation.Violence < Likelihood.Possible
        && annotation.Spoof < Likelihood.Possible
        && annotation.Medical < Likelihood.Possible;
}
```



Google API Client Libraries for .NET

https://developers.google.com/api-client-library/dotnet/

.NET client libraries for **all** Google services such as Ads, Blogger, etc. published on NuGet.

It has lower level libraries for Google Cloud Platform services as well such as Vision API, Dataflow, Cloud SQL administration.

Use **Google Cloud Client Libraries for .NET** when you can and **Google API Client Libraries for .NET** when you cannot.

Both libraries can be used together in a project

Cloud Tools for PowerShell

Cloud Tools for PowerShell

https://googlecloudplatform.github.io/google-cloud-powershell

A collection of PowerShell cmdlets for accessing and manipulating Google Cloud Platform resources

Installed as part of Cloud SDK for Windows

Allows access to **Compute Engine**, **Cloud Storage, Cloud SQL** and **Cloud CDN**

Cloud Tools for Visual Studio

Cloud Tools for Visual Studio

https://cloud.google.com/tools/visual-studio/docs/

A Visual Studio extension to manage Google Cloud resources from Visual Studio

Available on Visual Studio Gallery

Google Cloud Explorer allows access to **Compute Engine**, **Cloud Storage, Cloud SQL** and other resources

Deploy Windows/ASP.NET to Google Cloud

Use Cloud Launcher to deploy the ASP.NET stack (Windows Server, IIS, SQL Express, and ASP.NET) to a Compute Engine VM with one click

Create a Windows username/password for the newly created VM

Use Visual Studio to publish your ASP.NET app

SQL Server on Compute Engine

Pre-configured images for Compute Engine instances:

SQL Server Standard (2012, 2014, 2016)
SQL Server Web (2012, 2014, 2016)
SQL Server Enterprise (2012, 2014, 2016)

What’s coming next?

Summary

Converging worlds

Integrated tooling: Visual Studio plugins, Powershell

.NET Libraries for Google services

Managed runtime environments to fit your needs: IaaS, CaaS, PaaS.

Next Steps

Resources

cloud.google.com/dotnet
cloud.google.com/windows
g.co/codelabs/windows
Free Trial for codelabs or experiments: https://cloud.google.com/free/

Talks from Next'17

Take your ASP.NET application to next level: https://youtu.be/RMjy8xI-l70
Running .NET Containers: https://youtu.be/wBbi5A1wlbk
Deploying Windows based infrastructure on GCP: https://youtu.be/SNu-MCpCj_4
All sessions from GCPNext

Travix

cloud.google.com/dotnet
cloud.google.com/windows

Ufuk Haciogullari
ufukhaciogullari@gmail.com

Travix

35

countries

and expanding rapidly throughout all continents

550+

employees

dedicated to guiding our customers through their travel journey

3.500.000+

passengers a year

and we can't wait to serve even more travellers

50+

planes filled every day

flying to over 500 destinations around the globe

BudgetAir CheapTickets Vayama FlugLaden vliegwinkel.nl

Outline

- Where did we start?
- Where we are now?
- Deployment workflow
- What were the challenges?
- What did we achieve?

Where did we start?

60 classic .NET apps

Single datacenter in Amsterdam

One deployment per week

Where we are now?

Container Engine

New .NET Core apps are running in Docker containers

Standardize deployments




3rd Party Apps






Compute Engine

Classic .NET apps running on Windows VMs

Immutable Windows images

Other improvements

GoCD as the main CI system

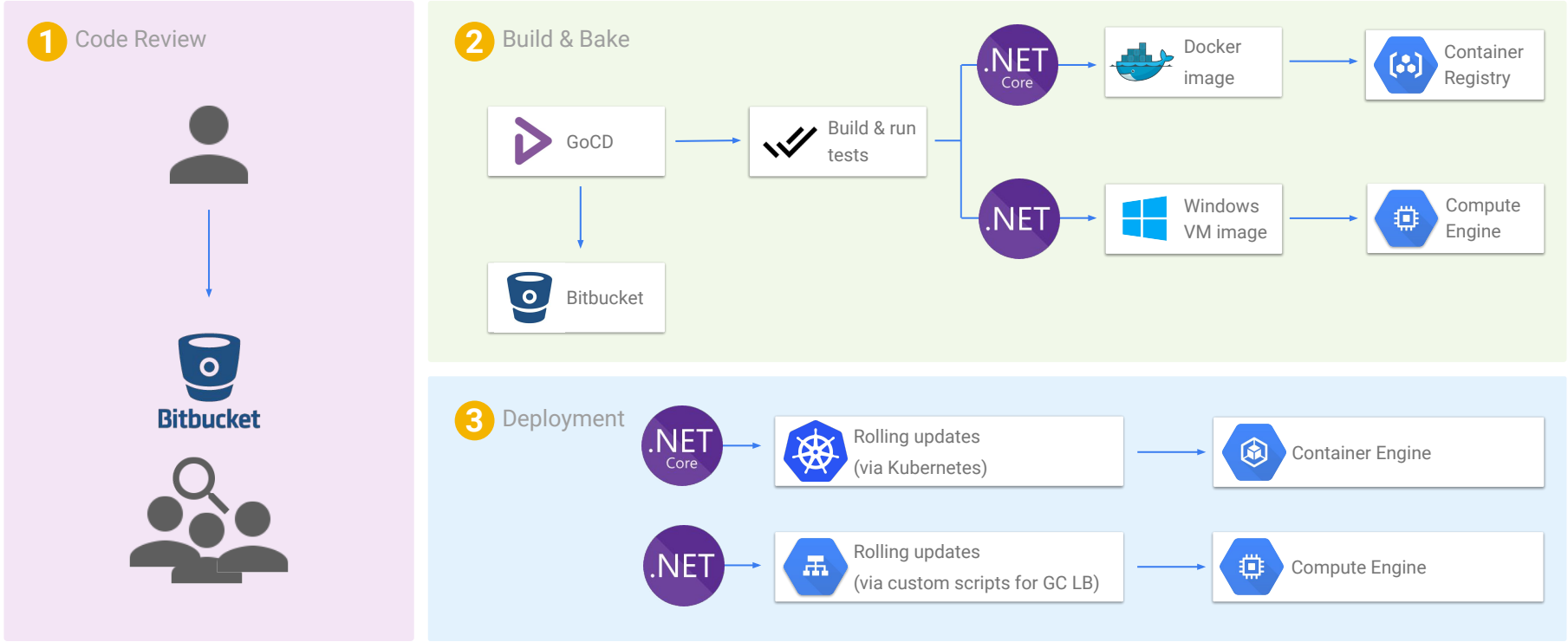
Everything on the network is encrypted

One-click deployments

Immutable Windows images

More on this: bit.ly/travix-win-vm

Deployment workflow



Challenges

- Monolithic solutions and integration at the database level
- Windows automation is hard
- LetsEncrypt certificate automation
- .NET Core support for popular libraries

What did we gain?

- Any app can use the services and data stores available in GCP
- Deployment frequency, while varying from app to app, can be up to 30-40 on a weekday
- The whole traffic on the network is encrypted
- Development teams work in their preferred language for the task
- Operations teams can manage the diverse environment easily

Hands-On Labs

cloud.google.com/dotnet
cloud.google.com/windows

Stefan Hogendoorn
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Stefan

- .NET Core application deploy to AppEngine
- Highlight Cloud Vision API
  - Demonstrate it!
  - Show some code for it.
- Start the codelabs - on screen and in the audience
  - Basic codelab
  - .Net application, and then add Stefan’s code from [shortlink]
- Give a prize for who deployed the application.

Next Steps

Resources

cloud.google.com/dotnet
cloud.google.com/windows
g.co/codelabs/windows
Free Trial for codelabs or experiments: https://cloud.google.com/free/

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Running .NET Containers: https://youtu.be/wBbi5A1wlbk
Deploying Windows based infrastructure on GCP: https://youtu.be/SNu-MCpCj_4
All sessions from GCPNext