Moving From Azure IaaS to PaaS, my own story

@Dennie Declercq – CloudBrew 2019

How the Microsoft Community has changed me!

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DDSoft
President / Developer

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#DreamingIsBelieving

MVP Developer Technologies

#7ThYearMagic

Content

- Setting the scene
- Creating a portal in IaaS
- Moving to PaaS
- Demo
- Evaluation, thoughts and take-a ways

Setting the scene

Our vision

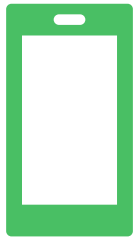
- Past
  - A global open data portal for people with disabilities
- Current
  - Software, advice and services for people with disabilities and surroundings

dPSOFT vzw

We had an idea

Target group = People with intellectual disabilities

What? Provide more Quality of Life



How? Via mobile apps connected to open data platform

Which? Start with food data

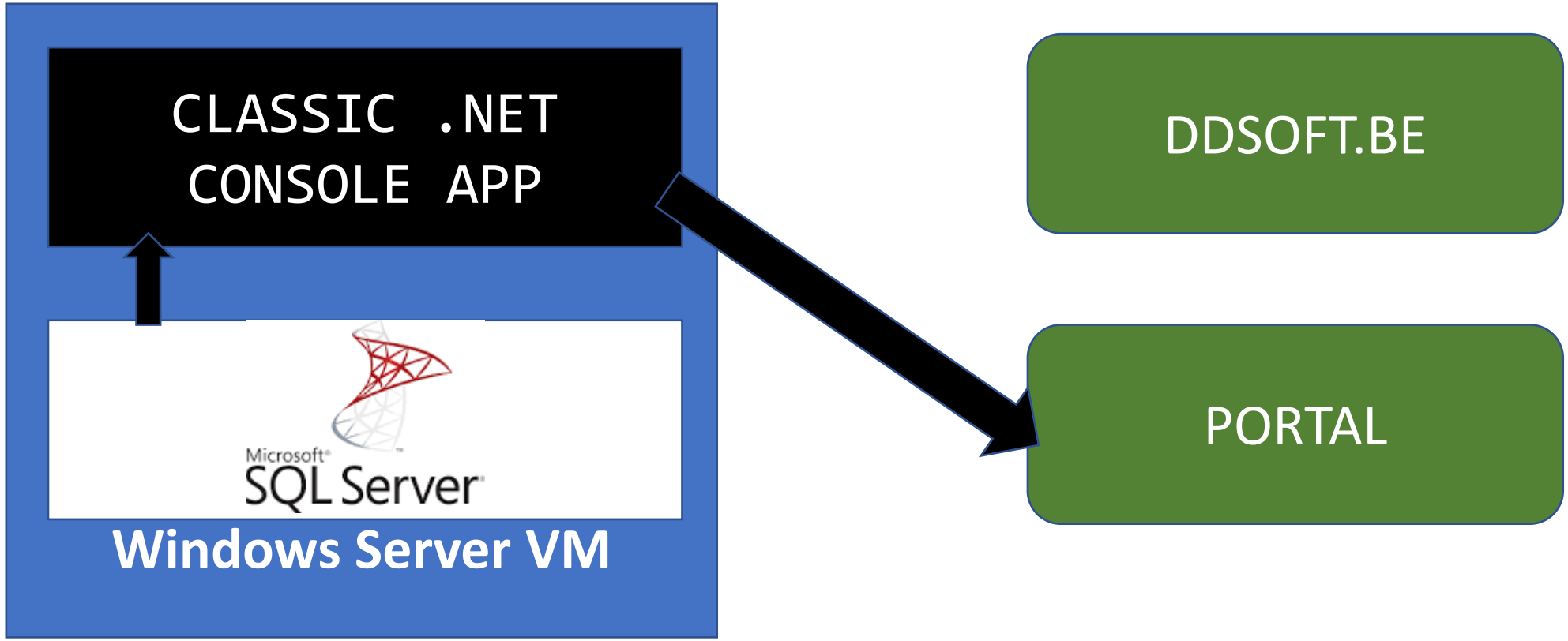
Our product iterations

- 2014 (1)
  - IaaS solution open data platform
  - 2 websites
  - 1 API
- 2018 (2)
  - PaaS solution open data platform
  - 2 classic asp.net websites
  - 1 API
- 2019 (3)
  - PaaS solution open data platform
  - 1 .net core website with API included

Iteration 1

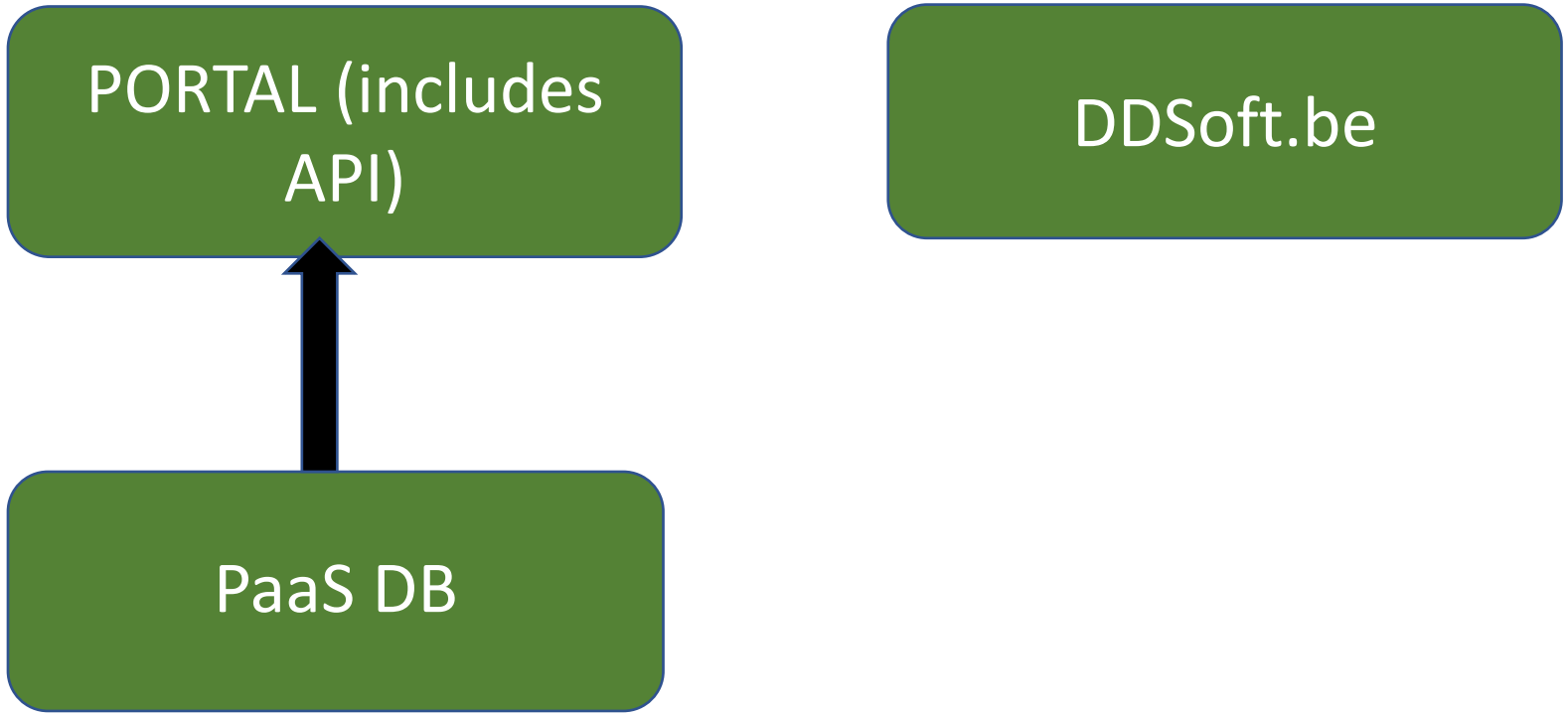
BLUE = IaaS

GREEN = PaaS



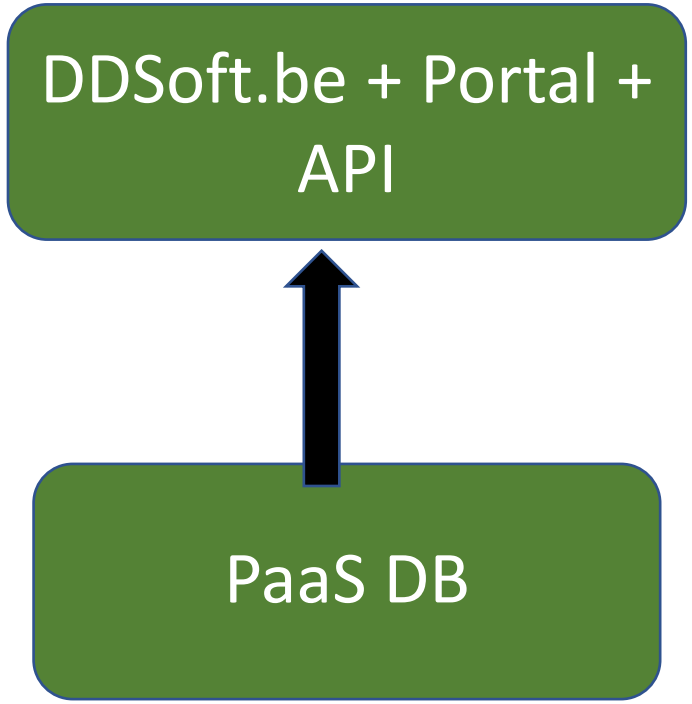
Iteration 2

GREEN = PaaS



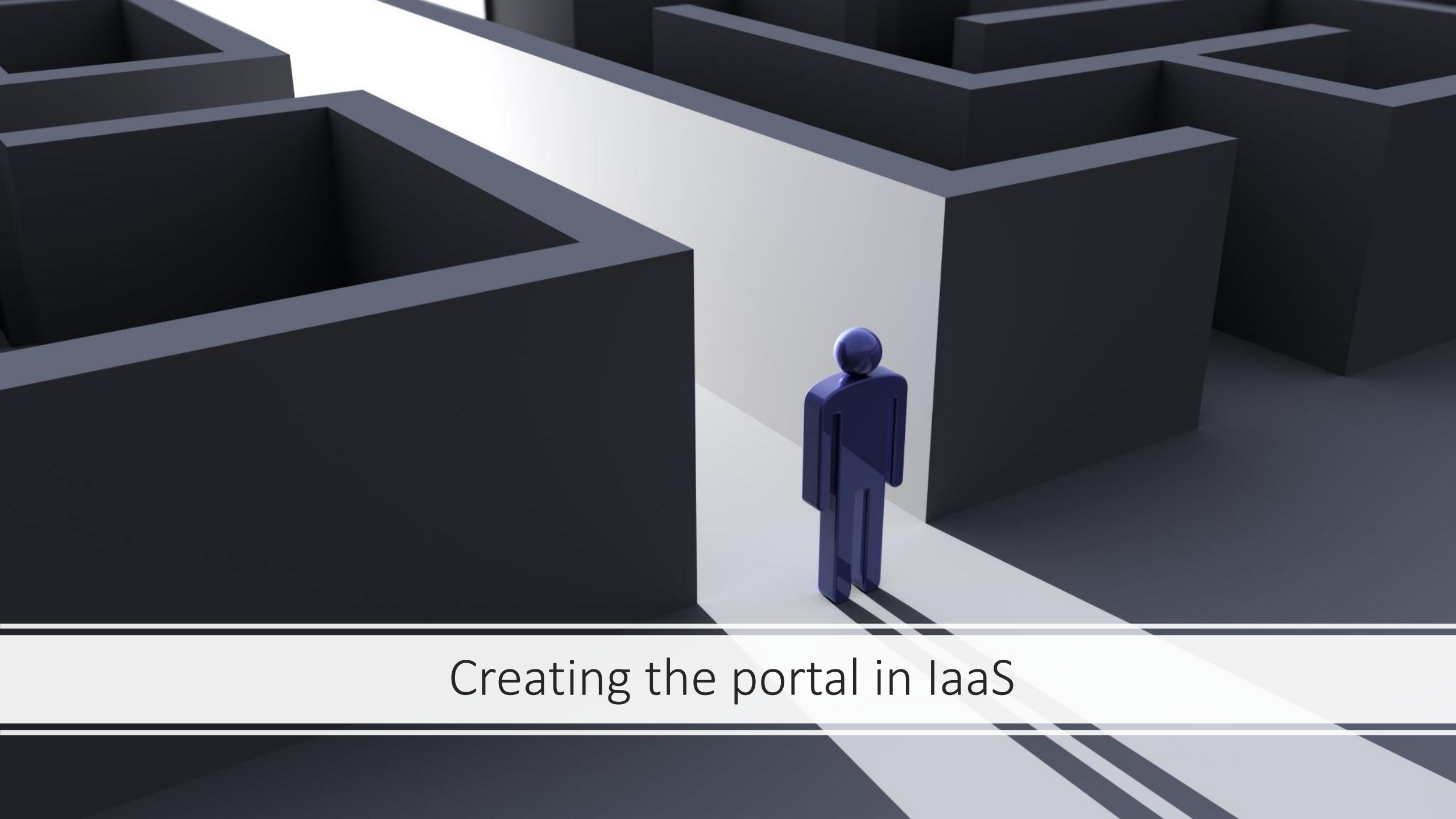
Iteration 3

GREEN = PaaS



Format of this talk

- Walkthrough
  - Making a Web API with backend database IaaS
  - Moving through PaaS



Creating the portal in IaaS

Our demo IaaS solution: ‘Speaker API’

- Windows VM
  - SQL Database Manager
  - Command prompt application

Servers – keep in minds

- Update VM
- Update Antivirus
- Back up Data
- Automatic updates
- Firewall

Creating a server 1

Create a resource

Home

Dashboard

All services

etplace See all

Popular

Windows Server
Quickstart tutoria

Ubuntu Server 1
Learn more

Web App
Quickstart tutoria

SQL Database
Quickstart tutoria

Serverless Funct
Quickstart tutoria

Creating a server 2

New

Search the Marketplace

Azure Marketplace

See all

- Get started
- Recently created
- Compute
- Networking
- Storage
- Web
- Mobile
- Containers

Popular

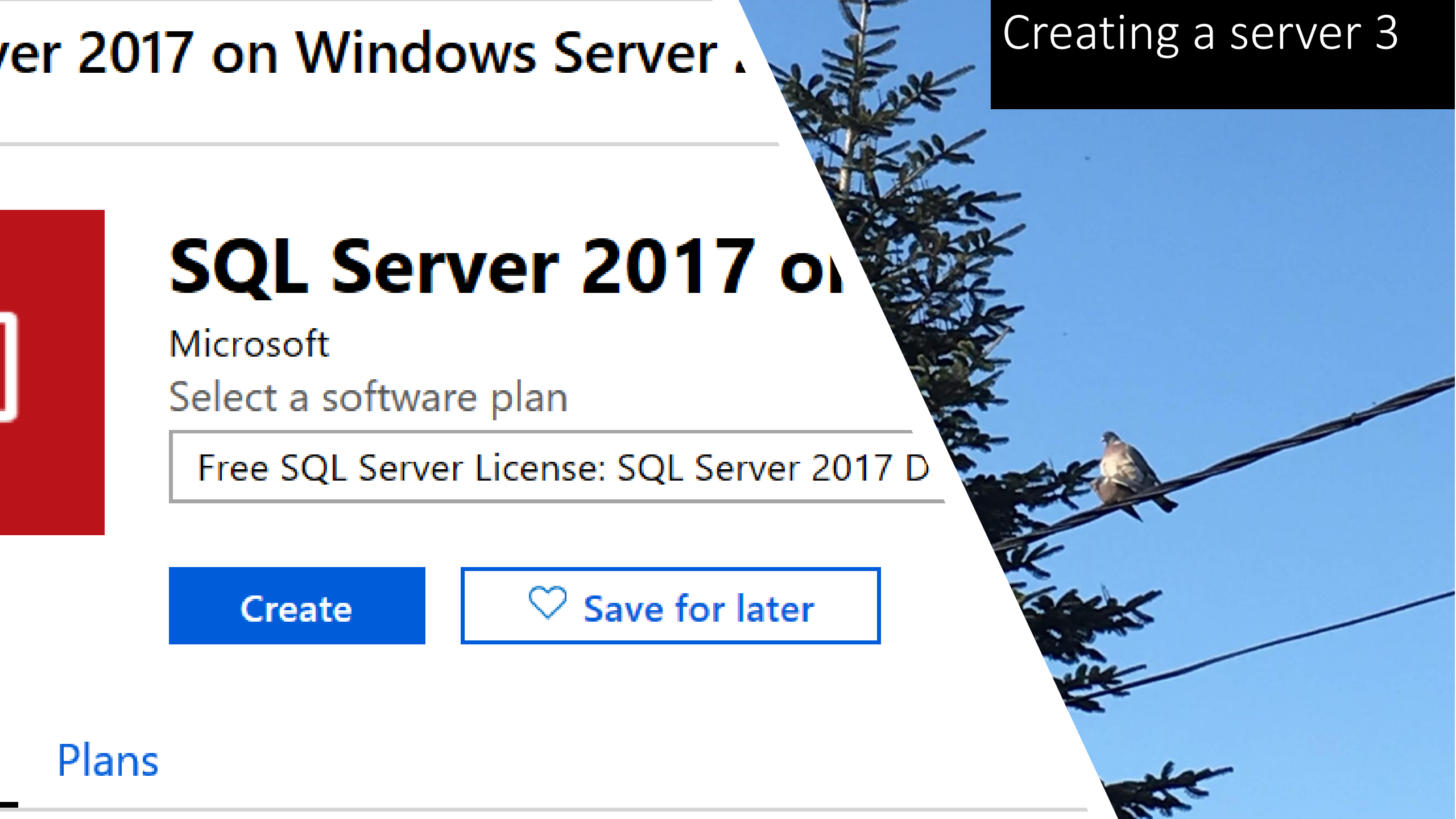
Windows Server 2016
Quickstart tutorial

Ubuntu Server 18.04 LTS
Learn more

Web App
Quickstart tutorial

SQL Database
Quickstart tutorial

Creating a server 3



Basics Disks Networking Management Advanced SQL Server settings Tags Review + create

Creating a server 4

Subscription * ⓘ — Visual Studio Enterprise

Resource group * ⓘ — ddmvp-speaker-vm

Create new

Instance details

Virtual machine name * ⓘ — DDSpeakerVM2

Region * ⓘ — (Europe) West Europe

Availability options ⓘ — No infrastructure redundancy required

Image * ⓘ — SQL Server 2017 Web on Windows Server 2016

Browse all public and private images

Scroll (step4)

Azure Spot instance ⓘ

○ Yes ◉ No

Size * ⓘ

Standard DS13 v2

8 vcpus, 56 GiB memory (€476.21/month)

Change size

Administrator account

Username * ⓘ

Password * ⓘ

Confirm password * ⓘ

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

VM Sizes

Select a VM size

Browse available virtual machine sizes and their features

Search by VM size...

Clear all filters

Size : **Small (0-4)** | Generation : **2 selected** | Family : **General purpose** | Premium disk : **Supported** | Add filter

Showing 11 of 229 VM sizes. | Subscription: Azure Pass - Sponsorship | Region: West Europe | Current size: Standard_DS1_v2

VM SIZE	OFFERING	FAMILY	VCPUS	RAM (GB)	DATA DISKS	MAX IOPS	TEMPORARY STOR...	PREMIUM DISK SU.
B1ms	Standard	General purpose	1	2	2	800	4 GB	Yes
B1s	Standard	General purpose	1	1	2	400	4 GB	Yes
B2ms	Standard	General purpose	2	8	4	2400	16 GB	Yes
B2s	Standard	General purpose	2	4	4	1600	8 GB	Yes
B4ms	Standard	General purpose	4	16	8	3600	32 GB	Yes

Select

Prices presented are estimates in your local currency that include only Azure infrastructure costs and any discounts for the subscription include any applicable software costs. View Azure pricing calculator. Final charges will appear in your local currency in cost analysis and

Scroll (step4)

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ⓘ

○ None ◉ Allow selected ports

Select inbound ports *

HTTP (80), RDP (3389) ⌄

⚠ **This will allow all IP addresses to access your virtual machine.** This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Save money

Save up to 49% with a license you already own using Azure Hybrid Benefit. Learn more

Already have a Windows Server license? * ⓘ

○ Yes ◉ No

Step 5: Disks

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. Learn more

Disk options

OS disk type * ⓘ

Premium SSD

Advanced

Use managed disks ⓘ

No Yes

Use ephemeral OS disk ⓘ

No Yes

Step 6: Networking

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.
Learn more

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * ⓘ
ddmvp-speaker-vm-vnet
Create new

Subnet * ⓘ
default (10.0.0.0/24)
Manage subnet configuration

Public IP ⓘ
(new) DDSpeakerVM2-ip
Create new

NIC network security group ⓘ
○ None ◉ Basic ○ Advanced

Steps7 & 8: Management & Advanced

- No changes, skip next

Step 10: Sql Settings

Security & Networking

SQL connectivity *

Public (Internet)

Port *

1433

SQL Authentication

SQL Authentication ⓘ

Disable Enable

Login name * ⓘ

Password * ⓘ

Azure Key Vault integration ⓘ

Disable Enable

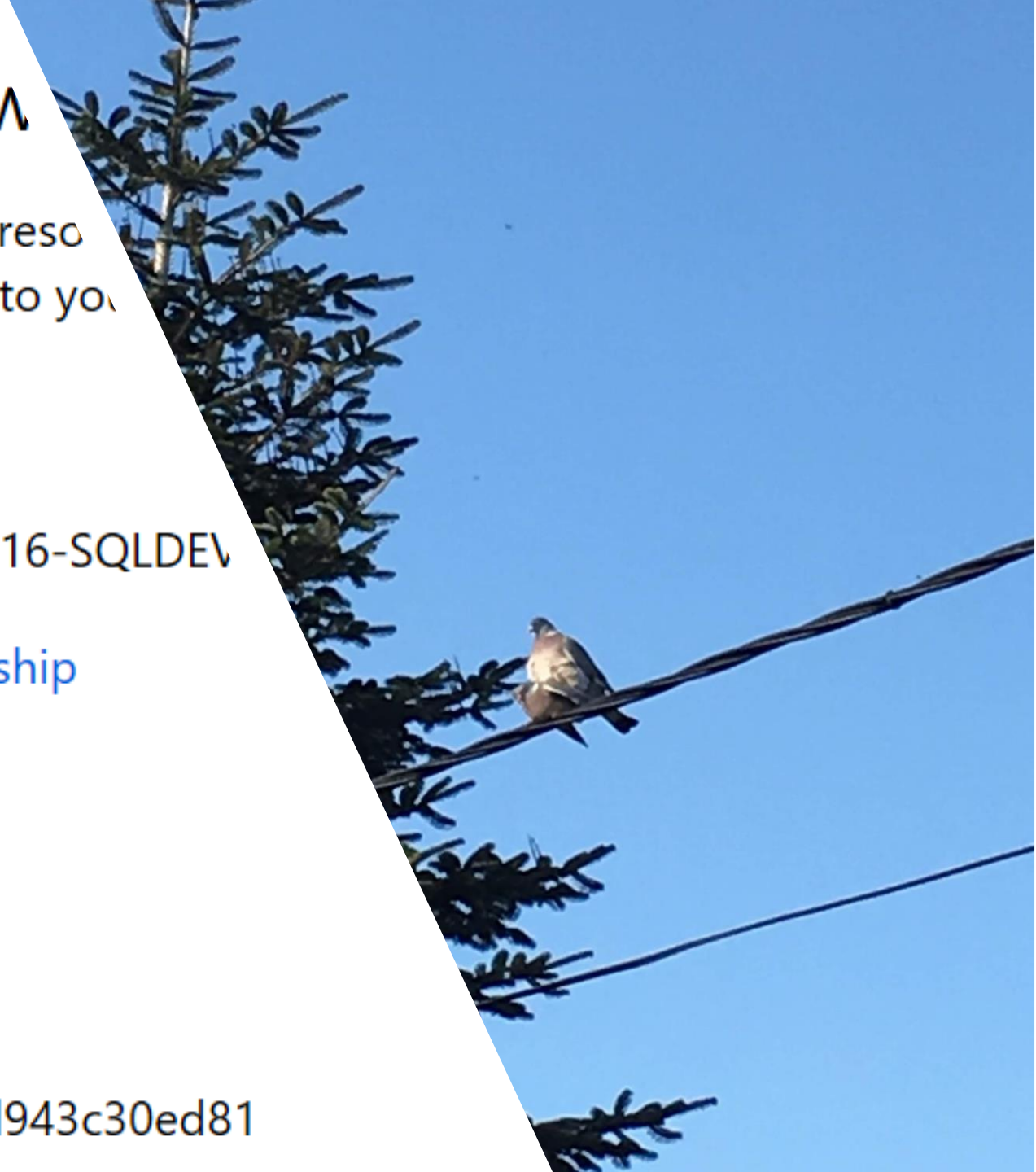
Your deployment is underw

Check the status of your deployment, manage reso
troubleshoot deployment issues. Pin this page to yo
dashboard to easily find it next time.

Deployment name: CreateVm-MicrosoftSQLServer.SQL2017-WS2016-SQLDEV
20190419122827
Subscription: Azure Pass - Sponsorship
Resource group: DDEMO

DEPLOYMENT DETAILS (Download)

Start time: 4/19/2019 12:34:52 PM
Duration: 2 minutes 7 seconds
Correlation ID: aaf1c98f-5111-4712-88ce-8d943c30ed81



Result: a lot of resources!

DDEMO-vnet	Virtual network	DDEMO	West Europe	Azure Pass - Spons...	•••
SpeakerVM	Virtual machine	DDEMO	West Europe	Azure Pass - Spons...	•••
SpeakerVM_disk2_57d0286887dd4c···	Disk	DDEMO	West Europe	Azure Pass - Spons...	•••
SpeakerVM_OsDisk_1_0ee8534dc88···	Disk	DDEMO	West Europe	Azure Pass - Spons...	•••
speakervm503	Network interface	DDEMO	West Europe	Azure Pass - Spons...	•••
SpeakerVM-ip	Public IP address	DDEMO	West Europe	Azure Pass - Spons...	•••
SpeakerVM-nsg	Network security gr...	DDEMO	West Europe	Azure Pass - Spons...	•••

And a lot of management

- Scheduling
  - On / Off
- Pricing
  - Up / Downgrade

- Windows updates on VM
- Antivirus updates

Our Database

Microsoft

SQL Server Management Studio

Our very small Database

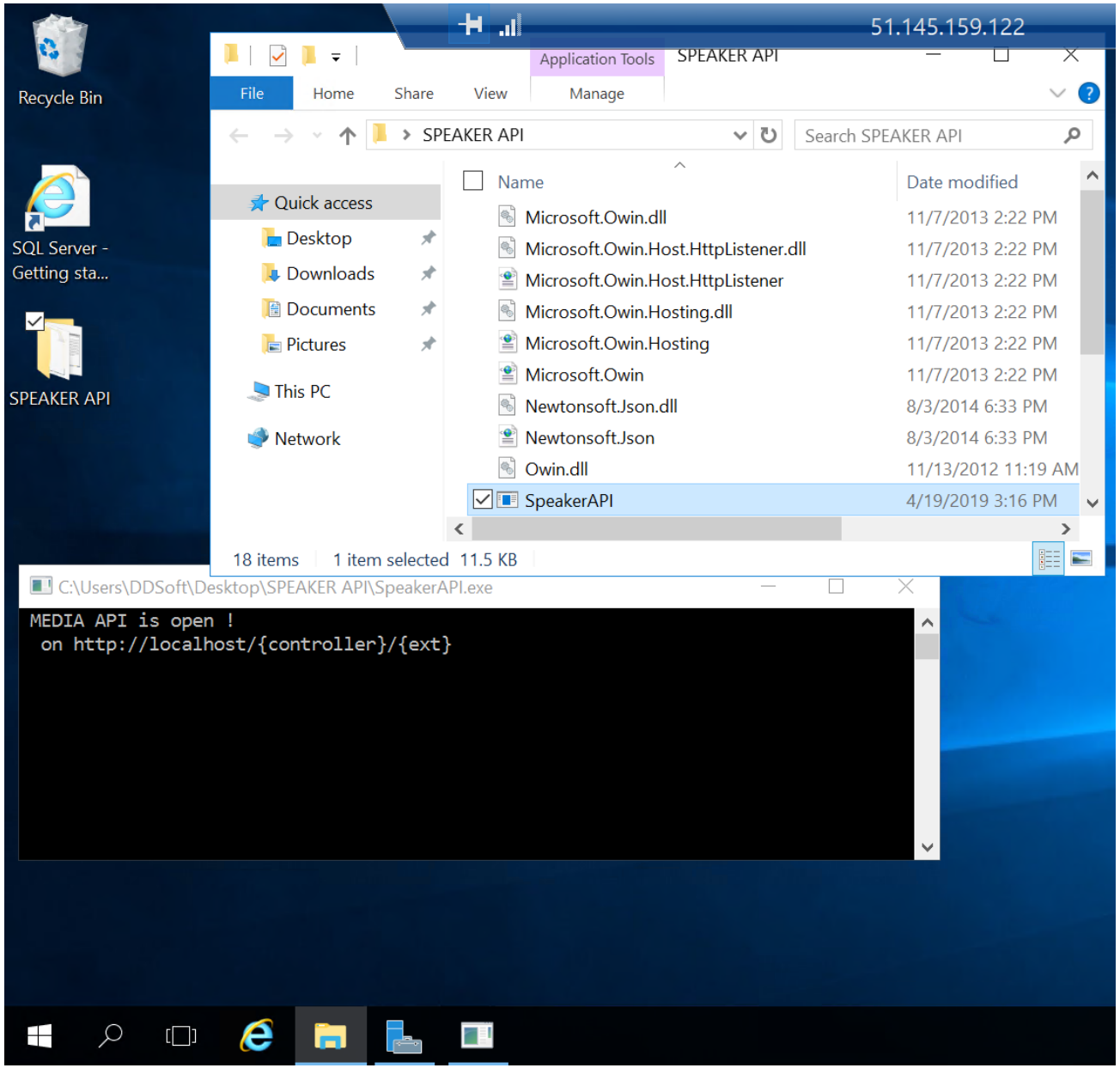
Column Name	Data Type	Allow Nulls
Id	int	☐
Date	datetime2(7)	☐
Event	nvarchar(50)	☐
Country	nvarchar(15)	☐
City	nvarchar(20)	☐
Talkname	nvarchar(150)	☐
info	nvarchar(150)	☑
Language	nvarchar(20)	☐
		☐

SpeakerVM.SpeakerDB - dbo.Talks | SpeakerVM.Speaker...akerDB - dbo.Talks

Id	Date	Event	Country	City	Talkname
1	2019-04-27 00:0...	Global Azure B...	Belgium	Temse	Moving from A...
2	2019-05-01 00:0...	Beyond Tech	United Kingdom	London	Networking at ...
NULL	NULL	NULL	NULL	NULL	NULL

Creating a command line app

- Just Classic ASP.NET Classes
- JSON classes
- C# Class = Model


51.145.159.122
Recycle Bin
SQL Server - Getting sta...
SPEAKER API
Application Tools
SPEAKER API
File
Home
Share
View
Manage
SPEAKER API
Search SPEAKER API
Quick access
Desktop
Downloads
Documents
Pictures
This PC
Network
Name
Date modified
Microsoft.Owin.dll 11/7/2013 2:22 PM
Microsoft.Owin.Host.HttpListener.dll 11/7/2013 2:22 PM
Microsoft.Owin.Host.HttpListener 11/7/2013 2:22 PM
Microsoft.Owin.Hosting.dll 11/7/2013 2:22 PM
Microsoft.Owin.Hosting 11/7/2013 2:22 PM
Microsoft.Owin 11/7/2013 2:22 PM
Newtonsoft.Json.dll 8/3/2014 6:33 PM
Newtonsoft.Json 8/3/2014 6:33 PM
Owin.dll 11/13/2012 11:19 AM
SpeakerAPI 4/19/2019 3:16 PM
18 items
1 item selected 11.5 KB
C:\Users\DDSoft\Desktop\SPEAKER API\SpeakerAPI.exe
MEDIA API is open !
on http://localhost/{controller}/{ext}

51.145.159.122

File Home Share View Manage

SPEAKER API

Search SPEAKER API

Quick access
Desktop
Downloads
Documents
Pictures
This PC
Network

Name	Date modified
Microsoft.Owin.dll	11/7/2013 2:22 PM
Microsoft.Owin.Host.HttpListener.dll	11/7/2013 2:22 PM
Microsoft.Owin.Host.HttpListener	11/7/2013 2:22 PM
Microsoft.Owin.Hosting.dll	11/7/2013 2:22 PM
Microsoft.Owin.Hosting	11/7/2013 2:22 PM
Microsoft.Owin	11/7/2013 2:22 PM
Newtonsoft.Json.dll	8/3/2014 6:33 PM
Newtonsoft.Json	8/3/2014 6:33 PM
Owin.dll	11/13/2012 11:19 AM
SpeakerAPI	4/19/2019 3:16 PM

18 items 1 item selected 11.5 KB

res://iesetup.dll/HardAdmin.htm

Internet Explorer Enhanced S...

Internet Explorer Enhanced Security Configuration is enabled

Internet Explorer Enhanced Security Configuration is currently enabled on your server. This number of security settings that define how users browse Internet and intranet Web sites. configuration also reduces the exposure of your server to Web sites that might pose a secu a complete list of the security settings in this configuration, see Effects of Internet Explorer Security Configuration.

This enhanced level of security can prevent Web sites from displaying correctly in Internet restrict access to network resources, such as files on Universal Naming Convention (UNC) s want to browse a Web site that requires Internet Explorer functionality that has been disab add the Web site to the inclusion lists in the Local intranet or Trusted sites zones. For more see Managing Internet Explorer Enhanced Security Configuration.

Do you want to open or save **talk.json** (520 bytes) from **localhost**?

Open Save Car

C:\Users\DDSoft\Desktop\SPEAKER API\SpeakerAPI.exe

```
MEDIA API is open !
 on http://localhost/{controller}/{ext}
```

talk - Notepad

File Edit Format View Help

[{"ID":1,"Date":"2019-04-27T00:00:00","Event":"Global Azure Bootcamp","Country":"Belgium","City":"Temse

Our API is Running IaaS!

NLD 3:11 PM 4/20/2019

Moving to PaaS

Steps to take:

- Make PaaS SQL Database
- Transfer Database
- Make PaaS Website
- Copy a lot of code to web project
- Change a little code
- Lose our IaaS worries

Moving to PaaS 1

New server

* Server name
speakersaasdatabase
.database.windows.net
* Server admin login
DDSoft
* Password
••••••••••••••
* Confirm password
••••••••••••••
* Location
West Europe
Allow Azure services to access server

New

Search the Marketplace

Azure Marketplace See all

- Get started
- Recently created
- Compute
- Networking
- Storage
- Web
- Mobile
- Containers
- Databases
- Analytics

Featured See all

Azure SQL Managed Instance
Quickstart tutorial

SQL Database
Quickstart tutorial

SQL Data Warehouse
Quickstart tutorial

Azure Database for MariaDB
Learn more

Couchbase Enterprise Edition
(Hourly Pricing) (preview)

Moving to PaaS 2

Database name: SpeakerPaaSDatabase

Server: (new) speakersaasdatabase (West Europe)

Create new

Want to use SQL elastic pool? Yes No

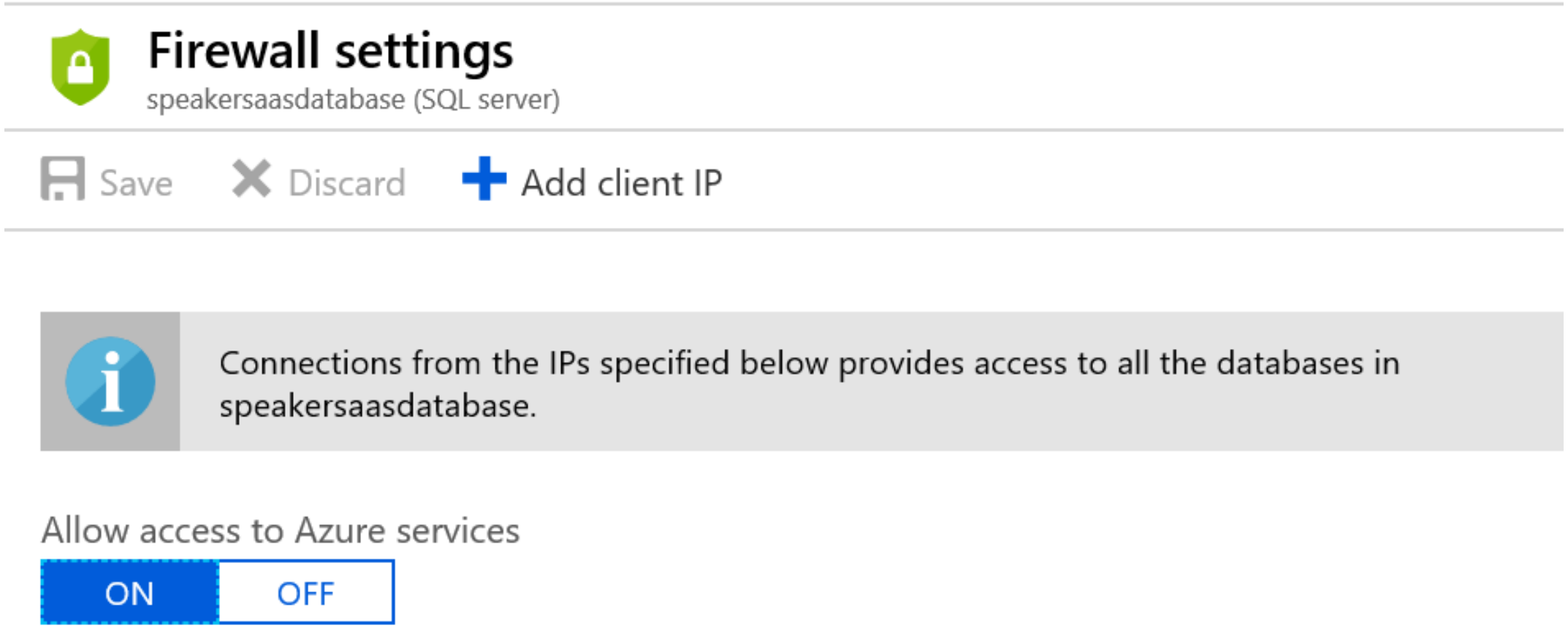
Compute + storage

Basic

2 GB storage

Configure database

Moving to PaaS 3



Your deployment is underway

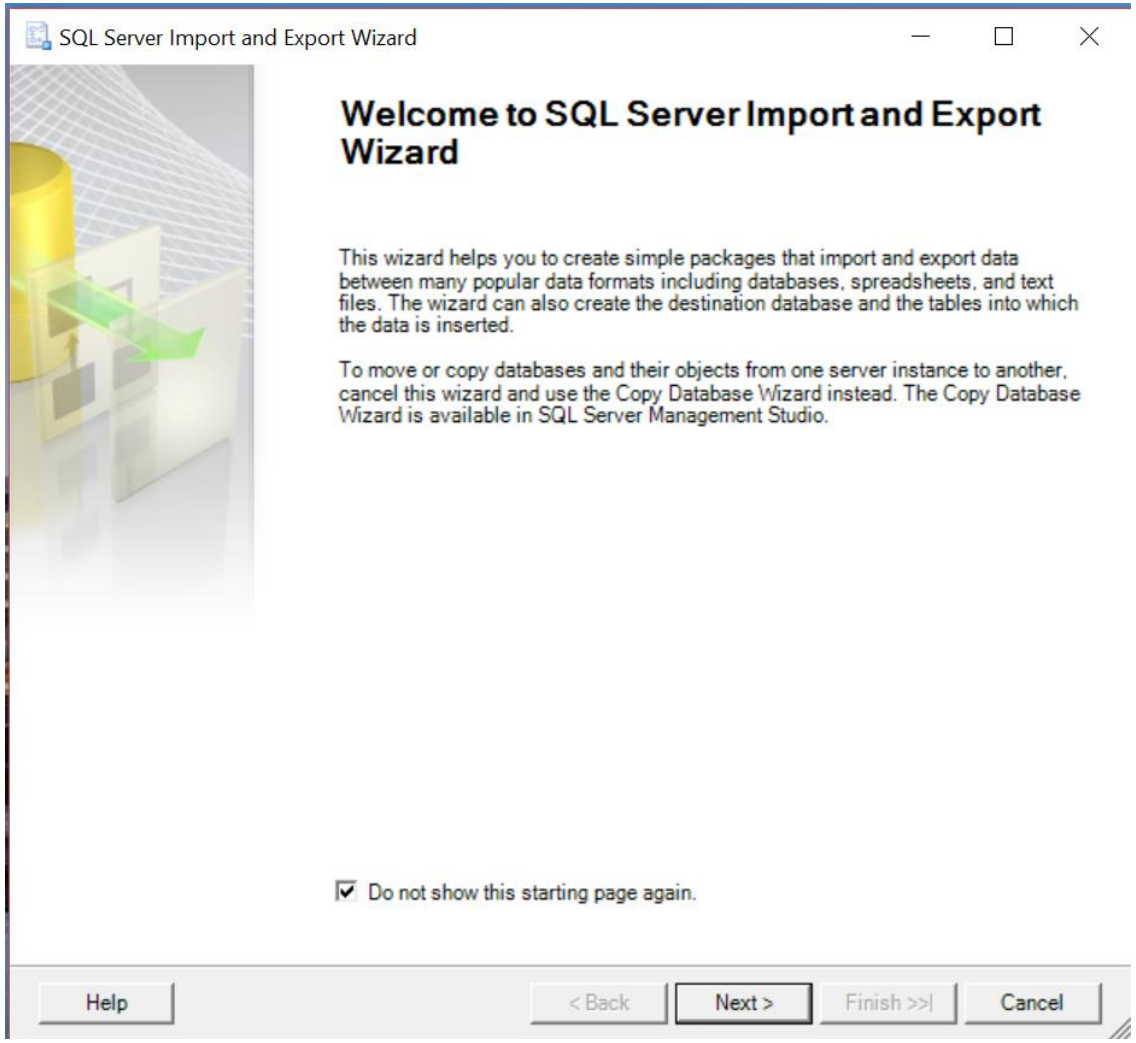
Check the status of your deployment, manage resources, or troubleshoot deployment issues. Pin this page to your dashboard to easily find it next time.

Deployment
name: Microsoft.SQLDatabase.newDatabaseNewServer_9ce7d1f2ff384108bf8b7
Subscription: Azure Pass - Sponsorship
Resource group: DDEMO

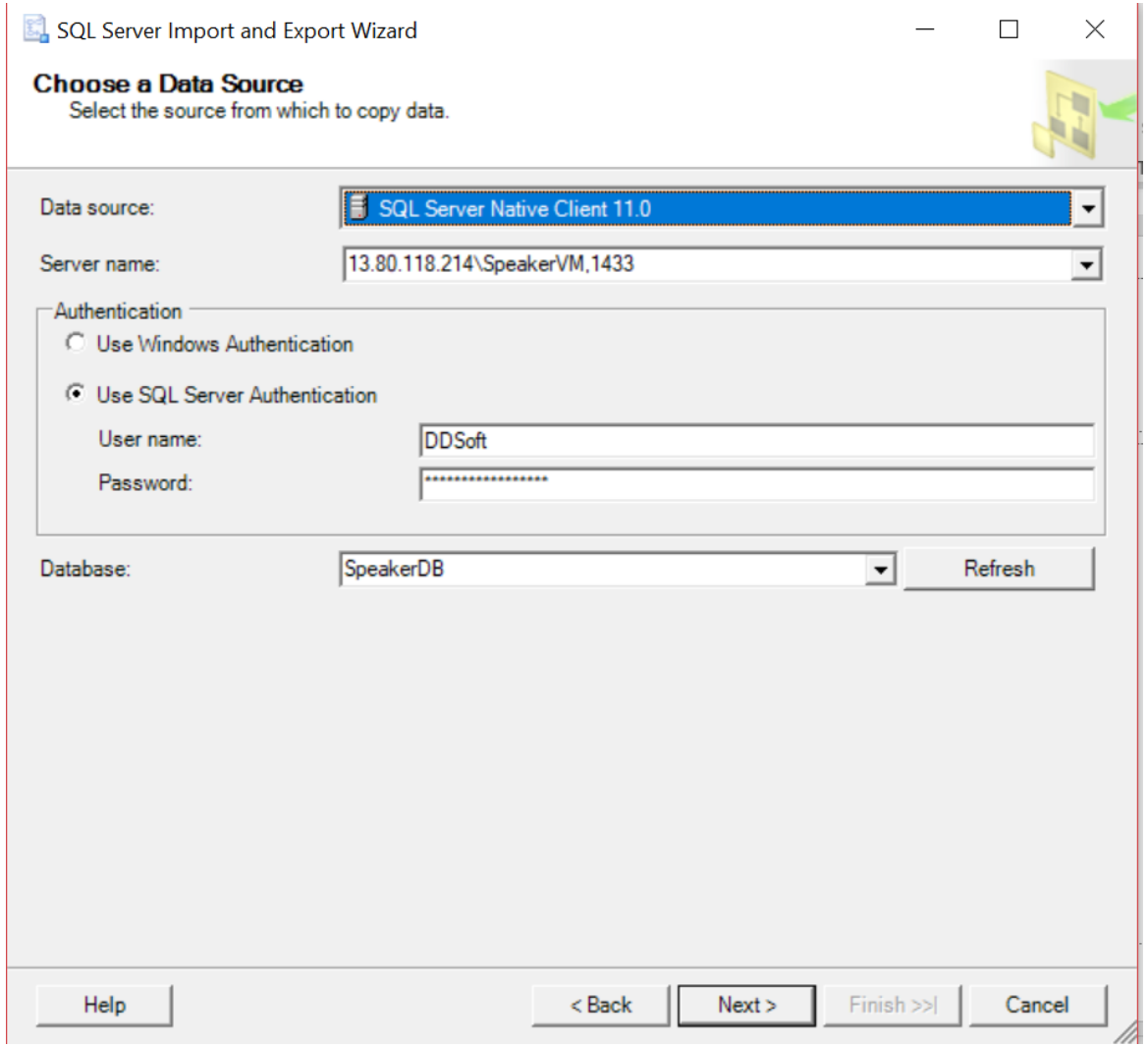
DEPLOYMENT DETAILS (Download)

Start time: 4/22/2019 9:53:16 AM
Duration: 12 seconds
Correlation ID: d2f5e8d8-1325-40b0-bfa5-cd7f33abd3a6

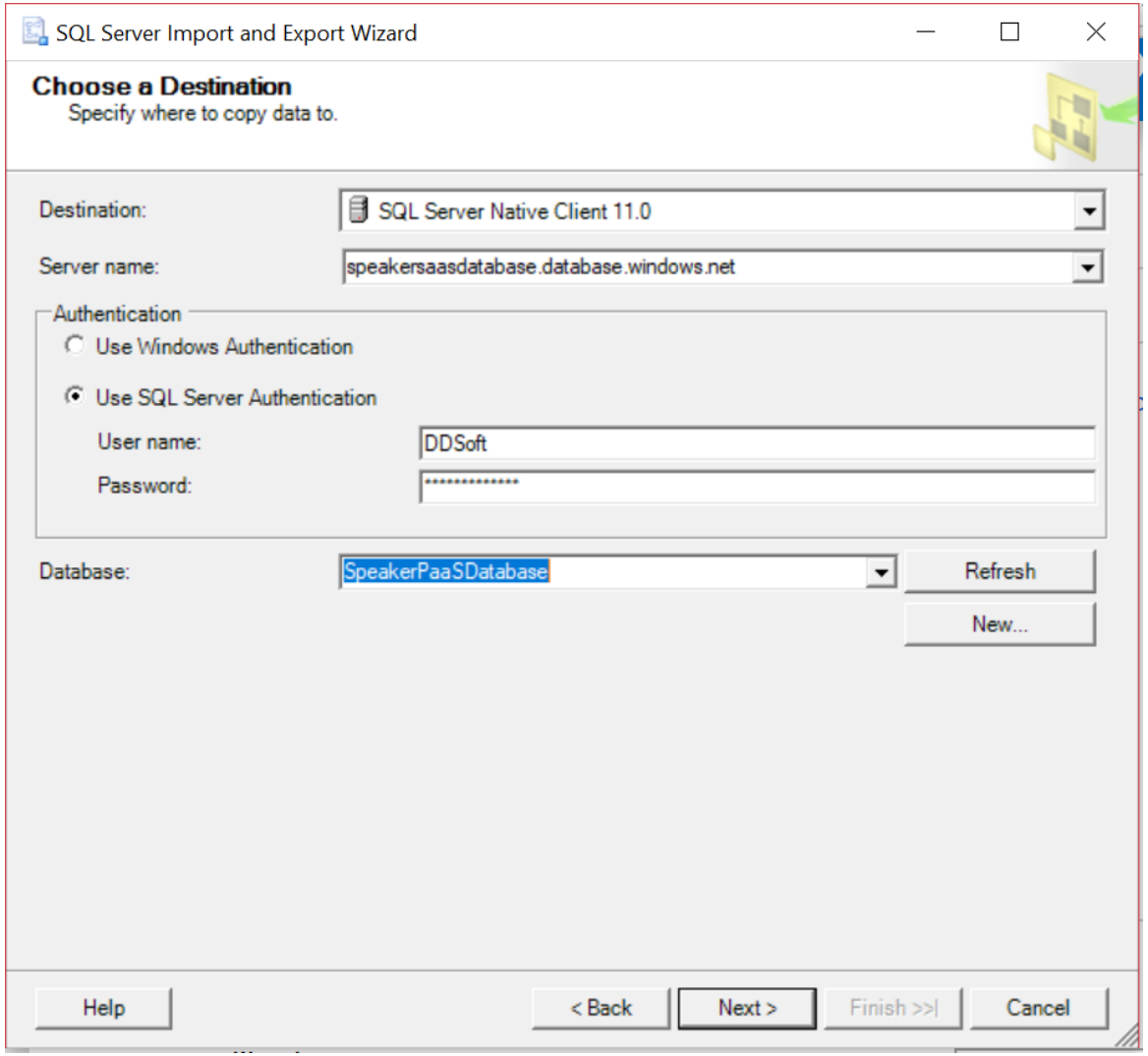
Great Tool


SQL Server Import and Export Wizard
Welcome to SQL Server Import and Export Wizard
This wizard helps you to create simple packages that import and export data between many popular data formats including databases, spreadsheets, and text files. The wizard can also create the destination database and the tables into which the data is inserted.
To move or copy databases and their objects from one server instance to another, cancel this wizard and use the Copy Database Wizard instead. The Copy Database Wizard is available in SQL Server Management Studio.
Do not show this starting page again.
Help
< Back
Next >
Finish >>|
Cancel

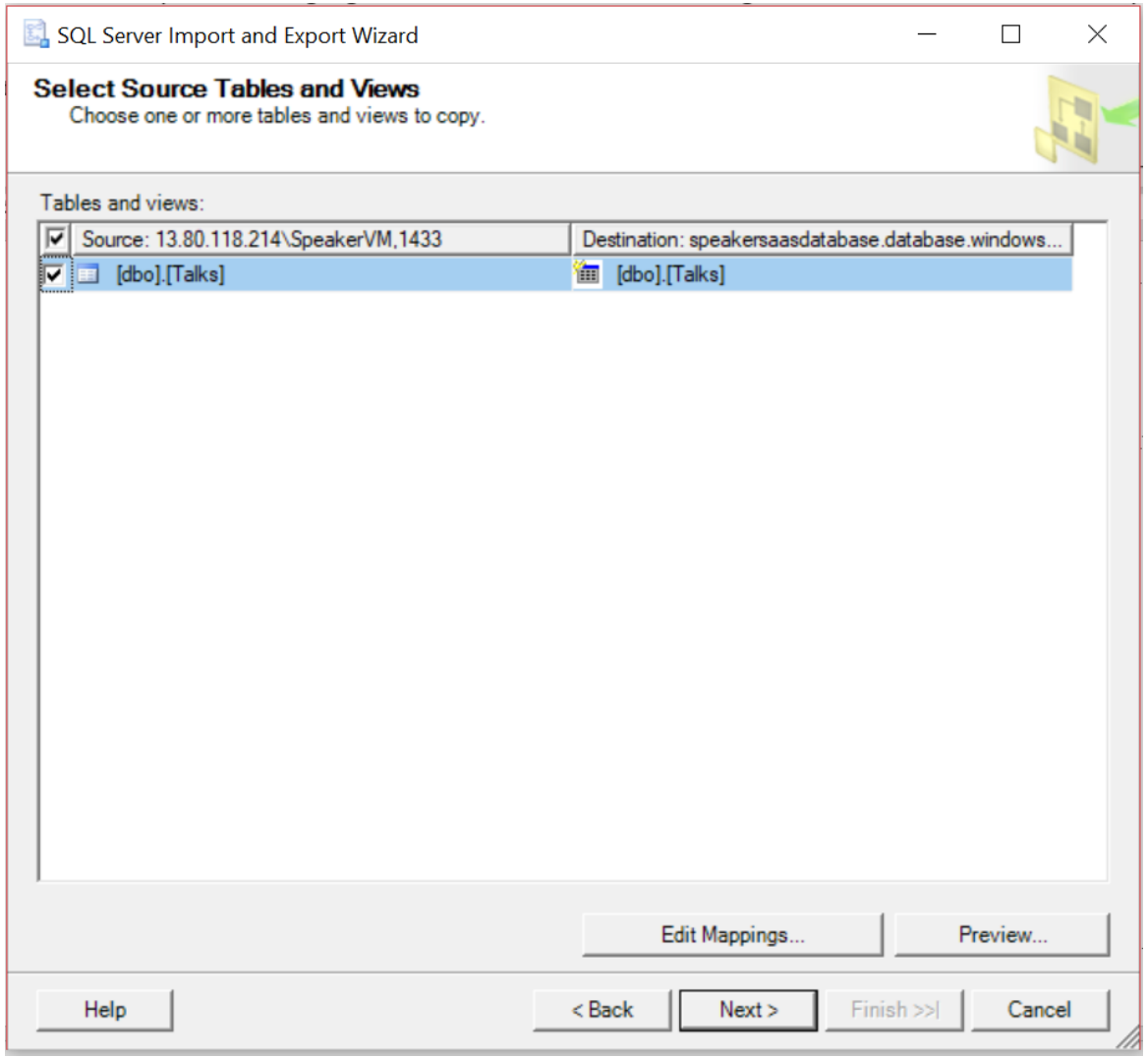
Moving to PaaS 6



Moving to PaaS 7



Moving to PaaS 8



Moving to PaaS 9

Create a new project

asp

Language

Platform

Project type

Recent project templates

- ASP.NET Core Web Application — C#
- Console App (.NET Core) — C#
- Console App (.NET Framework) — C#

ASP.NET Core Web Application
Project templates for creating ASP.NET Core applications for Windows, Linux and macOS using .NET Core or .NET Framework. Create Razor Pages, MVC, Web API, and Single Page (SPA) Applications.
C# Windows Linux macOS Web

ASP.NET Web Application (.NET Framework)
Project templates for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.
C# Windows Web

ASP.NET Web Application (.NET Framework)
Project templates for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.
Visual Basic Windows Web

ASP.NET Core Web Application
Project templates for creating ASP.NET Core applications for Windows, Linux and macOS using .NET Core or .NET Framework. Create Razor Pages, MVC, Web API, and Single Page (SPA) Applications.
F# Linux macOS Windows Web

Not finding what you're looking for?
Install more tools and features

Back Next

Configure your new project

ASP.NET Web Application (.NET Framework) C# Windows Web

Project name

WebApplication1

Location

C:\DDSoft\Projects\Websites\SpeakerPaaSApi\ ...

Solution name

WebApplication1

☑ Place solution and project in the same directory

Framework

.NET Framework 4.7.2

Back Create

Create a new ASP.NET Web Application

ASP.NET 4.7.2 Templates

An empty project template for creating ASP.NET applications. This template does not have any content in it.

Web Forms

A project template for creating ASP.NET Web Forms applications. ASP.NET Web Forms lets you build dynamic websites using a familiar drag-and-drop, event-driven model. A design surface and hundreds of controls and components let you rapidly build sophisticated, powerful UI-driven sites with data access.

MVC

A project template for creating ASP.NET MVC applications. ASP.NET MVC allows you to build applications using the Model-View-Controller architecture. ASP.NET MVC includes many features that enable fast, test-driven development for creating applications that use the latest standards.

Web API

A project template for creating RESTful HTTP services that can reach a broad range of clients including browsers and mobile devices.

Single Page Application

A project template for creating rich client side JavaScript driven HTML5 applications using ASP.NET Web API. Single Page Applications provide a rich user experience which includes client-side interactions using HTML5, CSS3, and JavaScript.

Authentication

No Authentication

Change

Add folders & core references

- [ ] Web Forms
- [x] MVC
- [x] Web API

Advanced

- [ ] Docker support

(Requires Docker Desktop)

- [ ] Also create a project for unit tests

SpeakerPaaSApi.Tests

Back | Create

Copy all the code / project files

- The only thing you need to change is the connection string.

localhost:49537/api/talk

localhost:49537/api/talk

This XML file does not appear to have any style information associated with it. The document tree is shown below.


```
▼<ArrayOfTalk xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas.datacontract.org/2004/07/SpeakerAPI.DTOs">
  ▼<Talk>
     <City>Temse</City>
     <Country>Belgium</Country>
     <Date>2019-04-27T00:00:00</Date>
     <Event>Global Azure Bootcamp</Event>
     <ID>1</ID>
     <Language>English</Language>
     <Talkname>Moving from Azure IaaS to PaaS my own story</Talkname>
   ▼<info>
      https://www.azug.be/events/2019/04/27/global-azure-bootcamp
     </info>
   </Talk>
  ▼<Talk>
     <City>London</City>
     <Country>United Kingdom</Country>
     <Date>2019-05-01T00:00:00</Date>
     <Event>Beyond Tech </Event>
     <ID>2</ID>
     <Language>English</Language>
   ▼<Talkname>
      Networking at conferences for autistic people and introverts
     </Talkname>
   ▼<info>
      https://skillsmatter.com/conferences/11735-beyondtech-2019
     </info>
   </Talk>
 </ArrayOfTalk>
```

Publish!

No IaaS worries anymore

- No VM updates
- No antivirus updates
- No unexcepted restarts

Demo time!

Moving a complete IaaS platform to PaaS!

Evaluation, thoughts and take-aways

As you see

Moving to PaaS is really simple

This transition is possible for:

- Each website project with a database

➔ That was hosted on a Windows Server

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What have I learned?

- I shouldn’t be scared for the change
- All my code is reusable
- After all, PaaS was way more manageable

Why failed our platform?

- It was open data, not every organization understood this principle
- Way too much bias that PWD can’t use a smartphone
- Too little time / capacity to manage production
- Too little budget

- And.. Food data wasn’t the best start…

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What should I do / shouldn’t I do again?

Should

- Do better market research
- Try to find a better marketing person
- Keep being fanatic

Shouldn’t

- Wait too long to update
- Be afraid of updates
- Start of blindly

Q&A? || Thanks

- dennie@ddsoft.be
- @DennieDeclercq