

Session 08

Azure PaaS

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Housekeeping

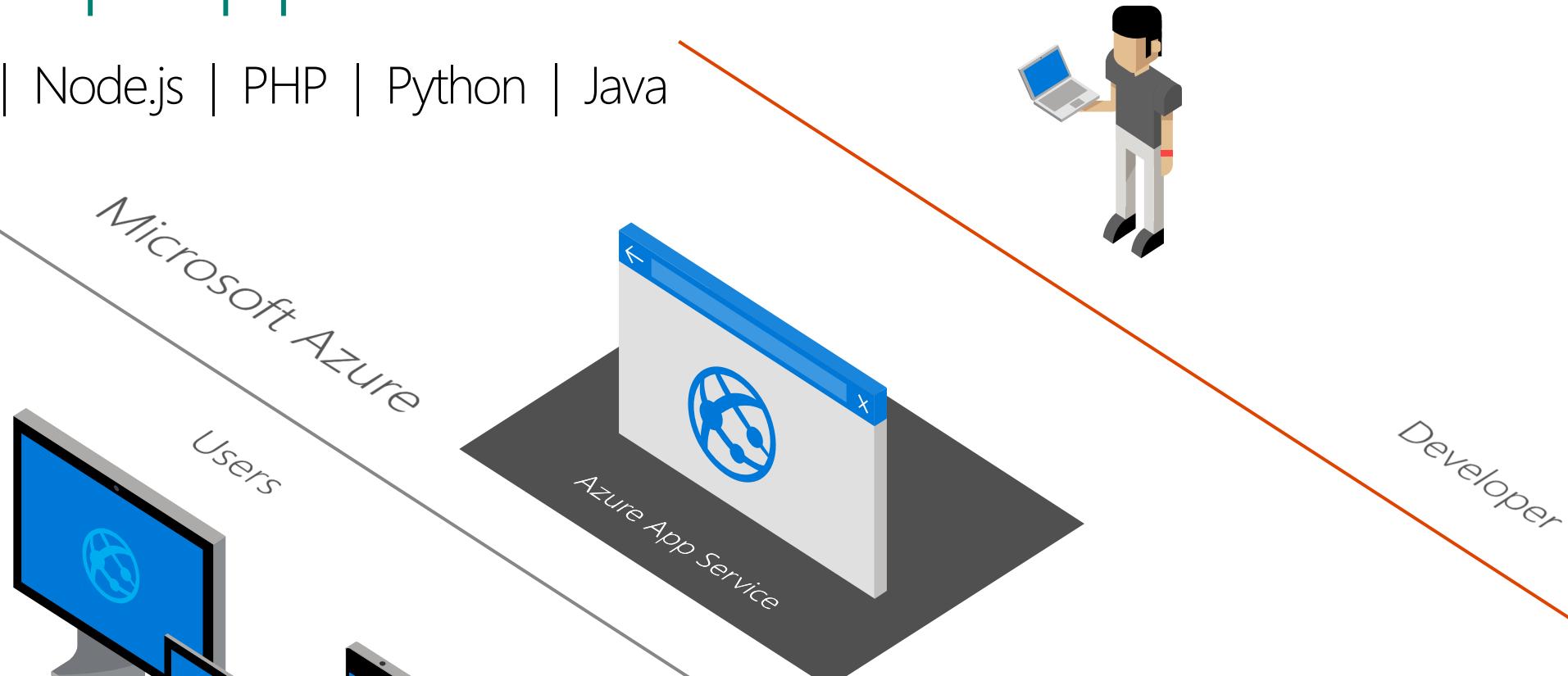
- Please keep yourself muted unless you are participating in the conversation, so we can have a more clear recording.
- If you have questions – don't hesitate and ask.

Azure App Service

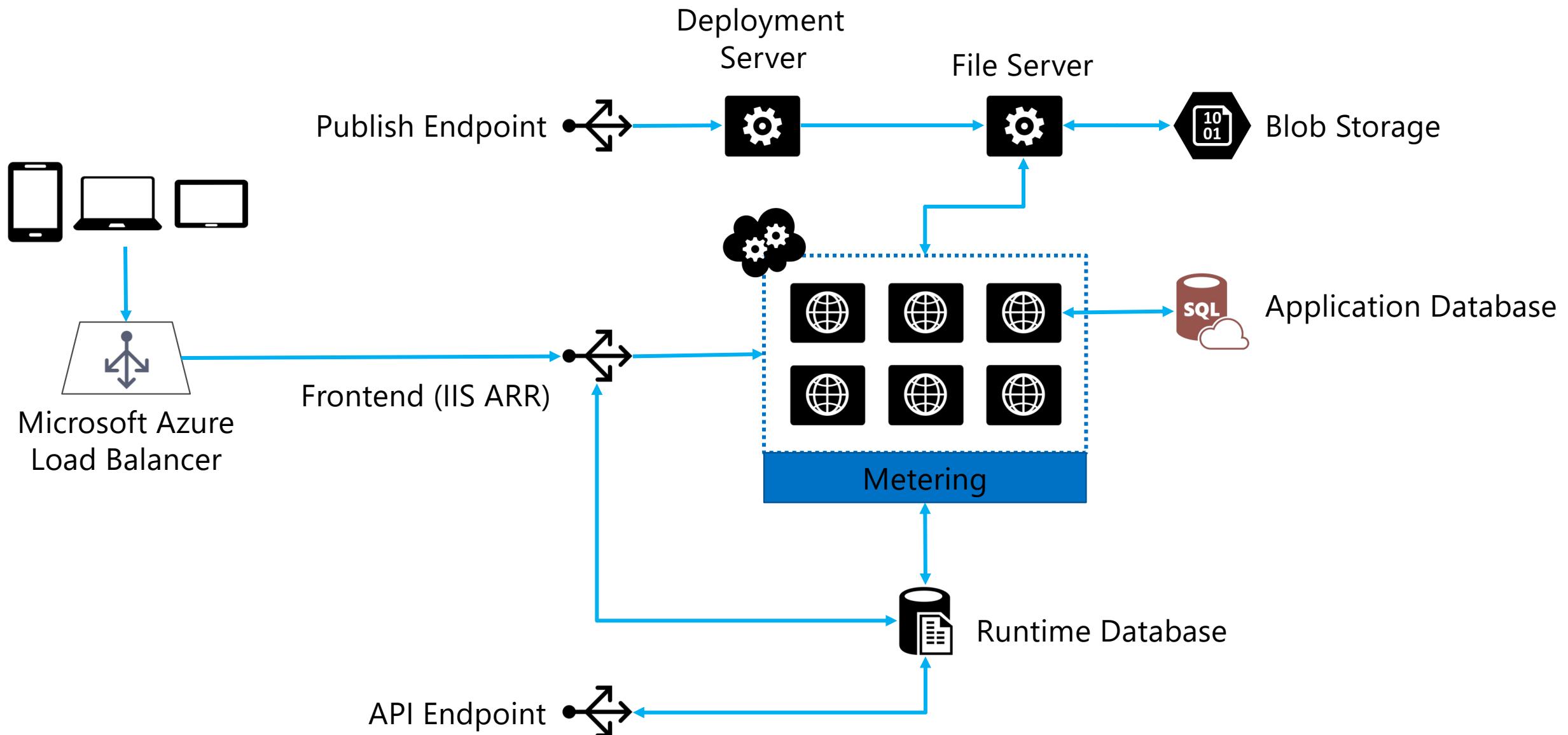


Develop apps with...

.NET | Node.js | PHP | Python | Java

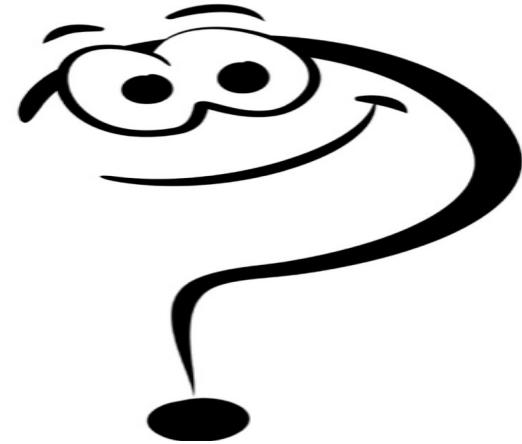


App Service architecture



Quiz

Why do I need to have 2 load balancers that should do more or less the same job?



Quiz

Why do I need to have 2 load balancers that should do more or less the same job?

Azure network load balancer works on L4 of network protocol and is only able to operate with protocol and port number. IIS ARR works on L7 and is able to work on HTTP level. ISS ARR is able to handle “sticky sessions”.

DEMO

App Service

App Service features

Source control integration

Choose your own adventure

GitHub

Local Git

BitBucket

External Git

Azure Repos

One Drive

Drop Box

Last login: Thu Jun 30 15:23:50 on ttys001
boykoant@Antons-MacBook-Pro ~ % kuduscript --help

Usage: kuduscript [options]

Options:

-h, --help	output usage information
-V, --version	output the version number
-r, --repositoryRoot [dir path]	The root path for the repository (default: .)
--aspWAP <projectFilePath>	Create a deployment script for .NET web application, specify the project file path
--aspNetCore <projectFilePath>	Create a deployment script for ASP.NET Core web application, specify the project file path
--aspWebSite	Create a deployment script for basic website
--go	Create a deployment script for Go website
--node	Create a deployment script for node.js website
--ruby	Create a deployment script for ruby website
--php	Create a deployment script for php website
--python	Create a deployment script for python website
--functionApp [projectFilePath]	Create a deployment script for function App, specify the project file path if using msbuild
--basic	Create a deployment script for any other website
--dotNetConsole <projectFilePath>	Create a deployment script for .NET console application, specify the project file path
-s, --solutionFile <file path>	The solution file path (sln)
-p, --sitePath <directory path>	The path to the site being deployed (default: same as repositoryRoot)
-t, --scriptType <batch bash posh>	The script output type (default: batch)
-o, --outputPath <output path>	The path to output generated script (default: same as repository root)
-y, --suppressPrompt	Suppresses prompting to confirm you want to overwrite an existing destination file.
--no-dot-deployment	Do not generate the .deployment file.
--no-solution	Do not require a solution file path (only for --aspWAP otherwise ignored).

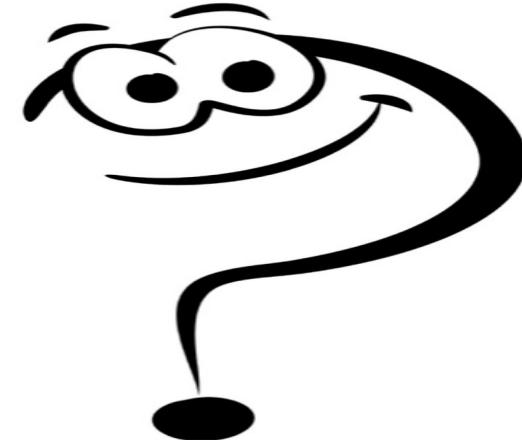
boykoant@Antons-MacBook-Pro ~ %

Custom deployment script

```
● ● ●  
...  
:: 5. Build  
IF EXIST "%DEPLOYMENT_TARGET%\gruntfile.js" (  
    echo "grunt build"  
  
    pushd "%DEPLOYMENT_TARGET%"  
  
    call :ExecuteCmd npm install grunt-cli  
  
    grunt build  
  
    IF !ERRORLEVEL! NEQ 0 goto error  
  
    popd  
)  
  
...
```

Quiz

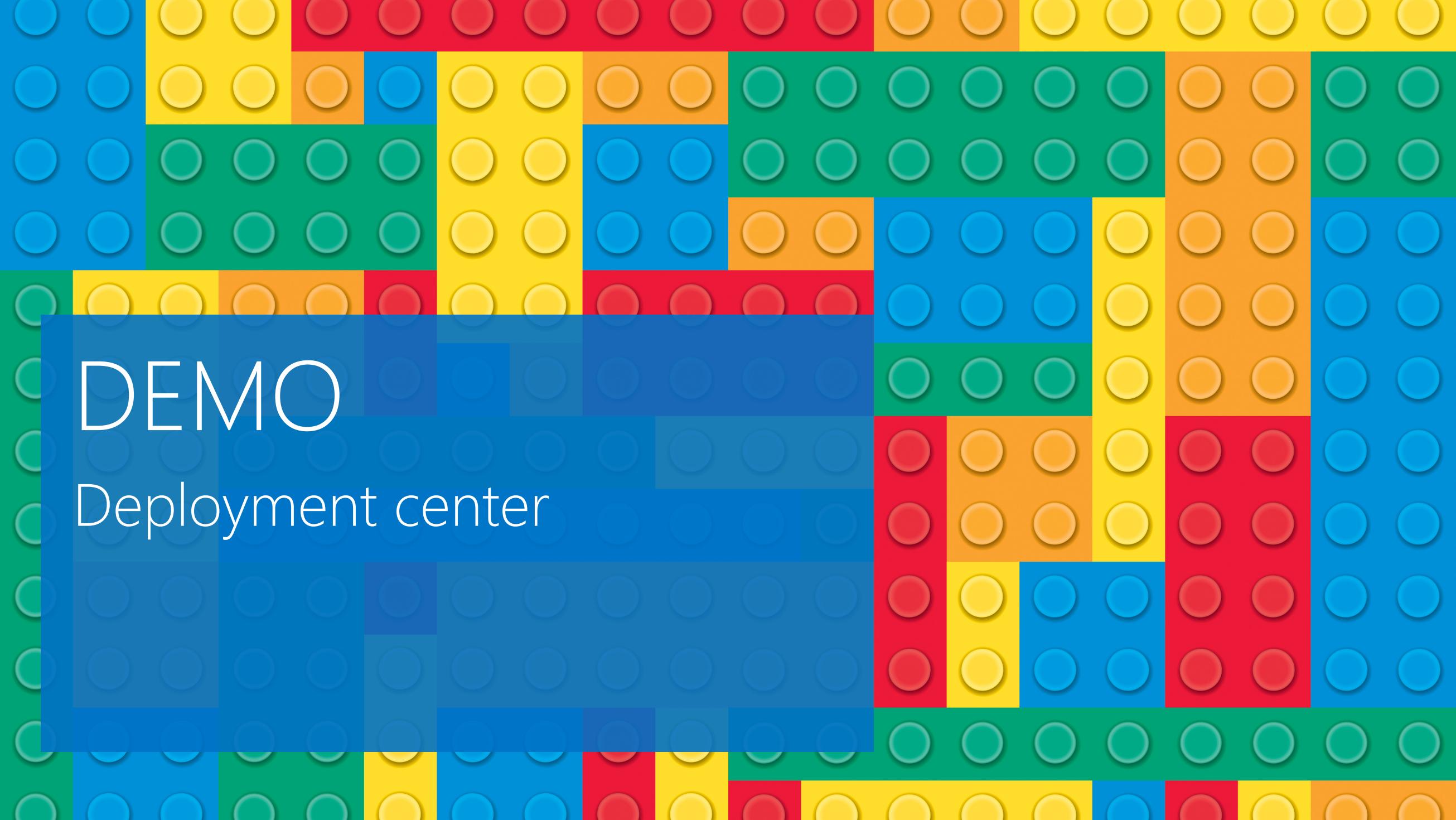
Why having a CPU-intensive long running build process on top of Kudu can kill your app?



Quiz

Why having a CPU-intensive long running build process on top of Kudu can kill your app?

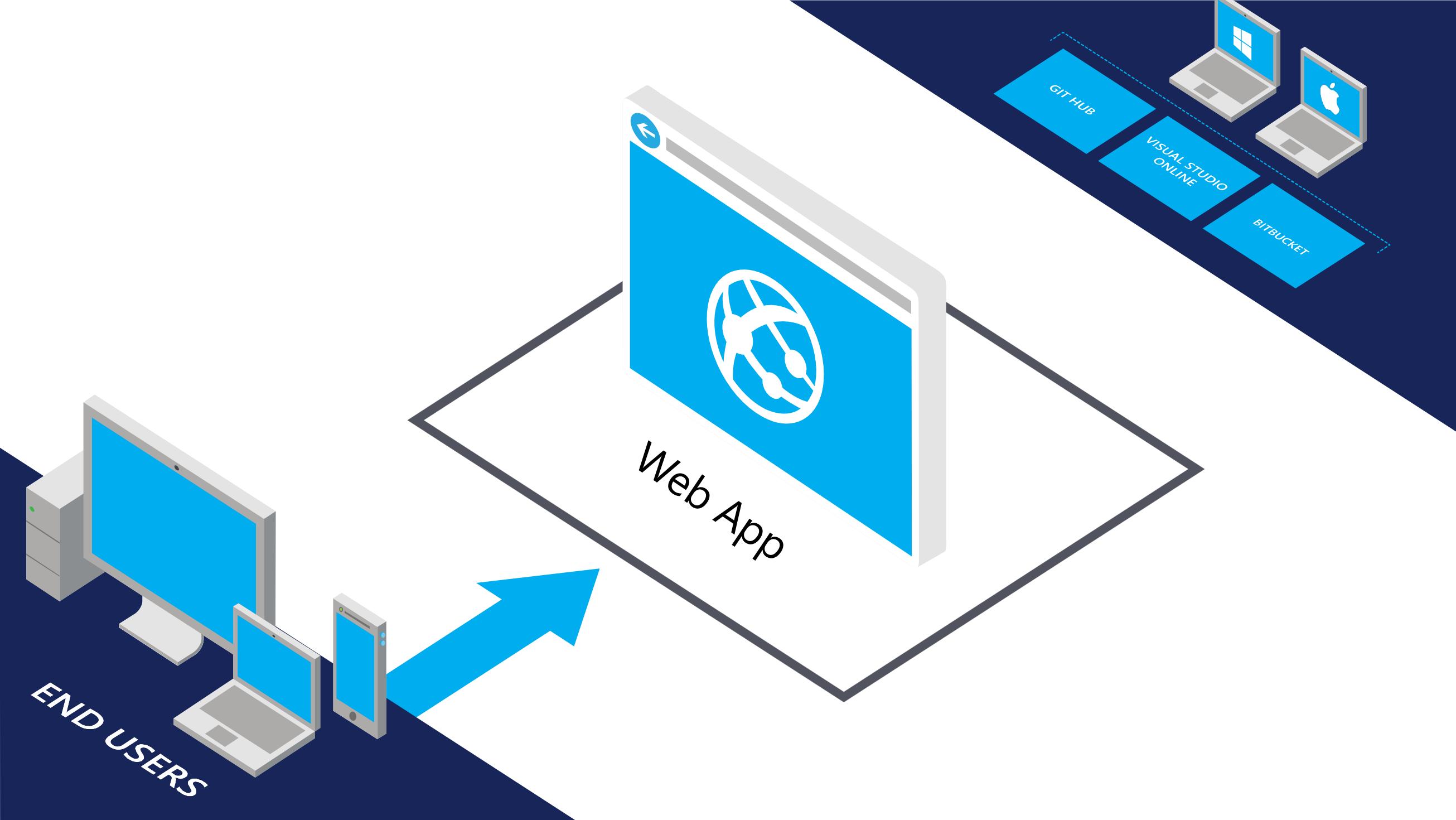
Kudu runs on the same nodes as your web app and they share all resources.

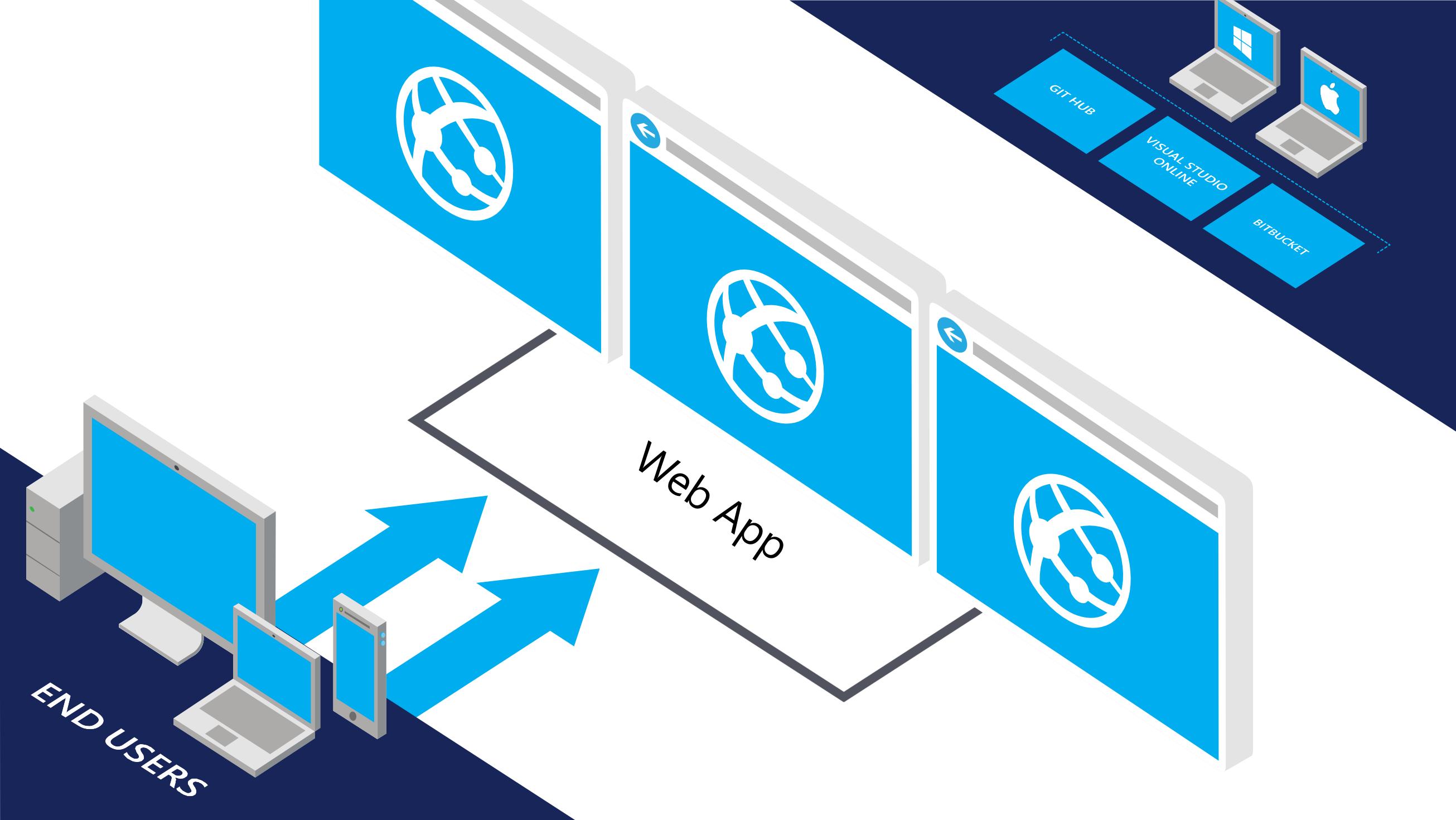


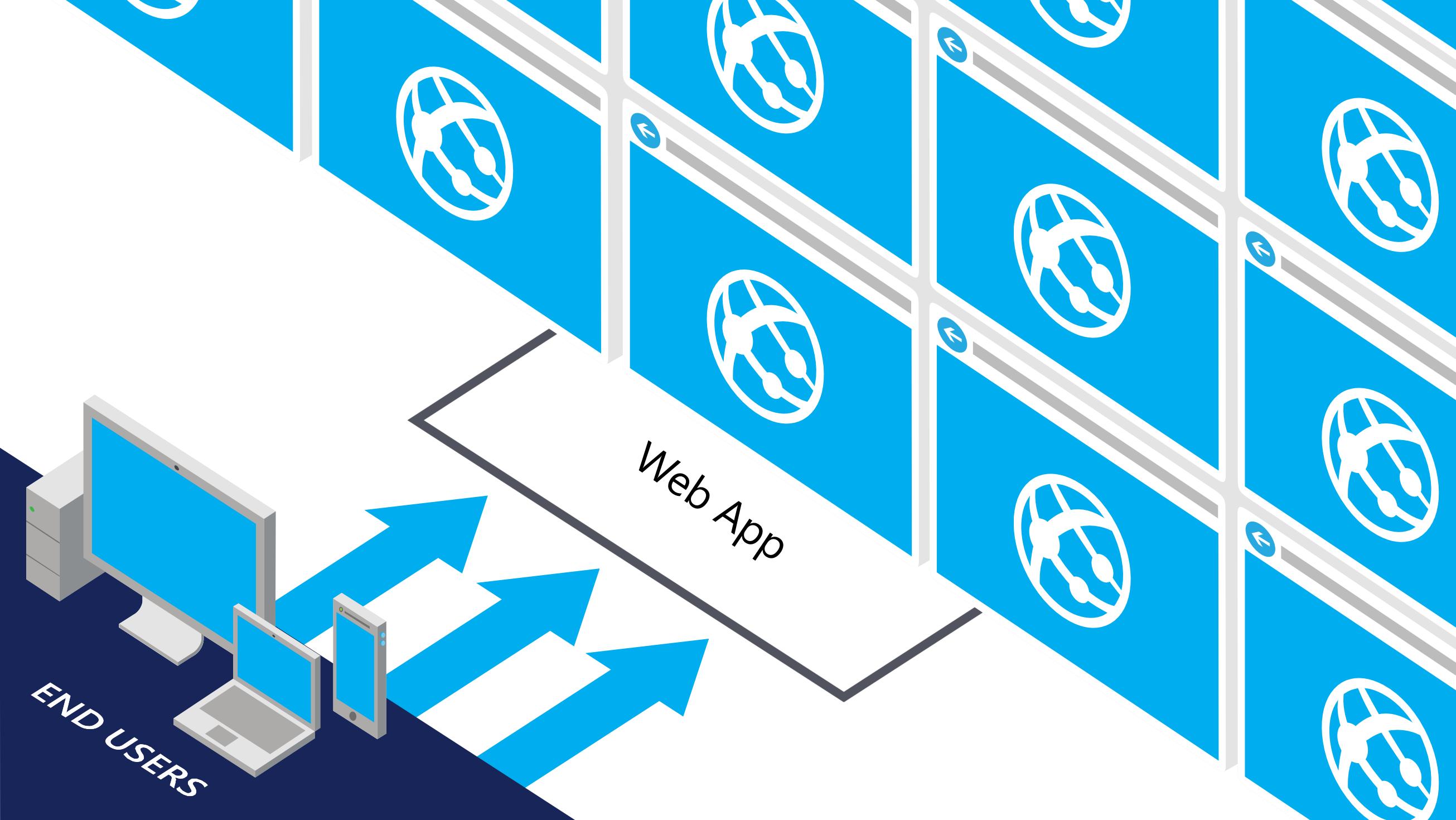
DEMO

Deployment center

Auto scale

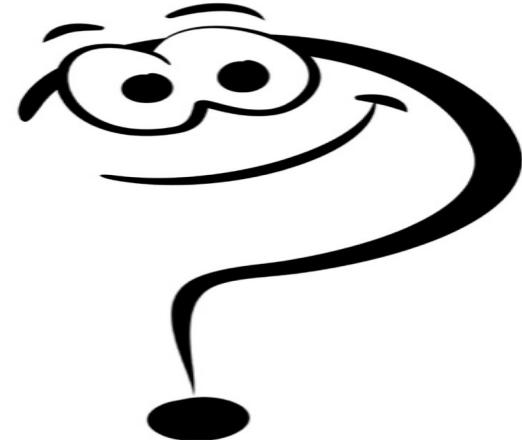






Quiz

Why web apps auto scale
feature can kill your app?



Quiz

Why web apps auto scale feature can kill your app?

- Scale is not instantaneous
- Only the web tier scales

It's not about "don't use auto scale" for the web apps, it's more about "use your head".

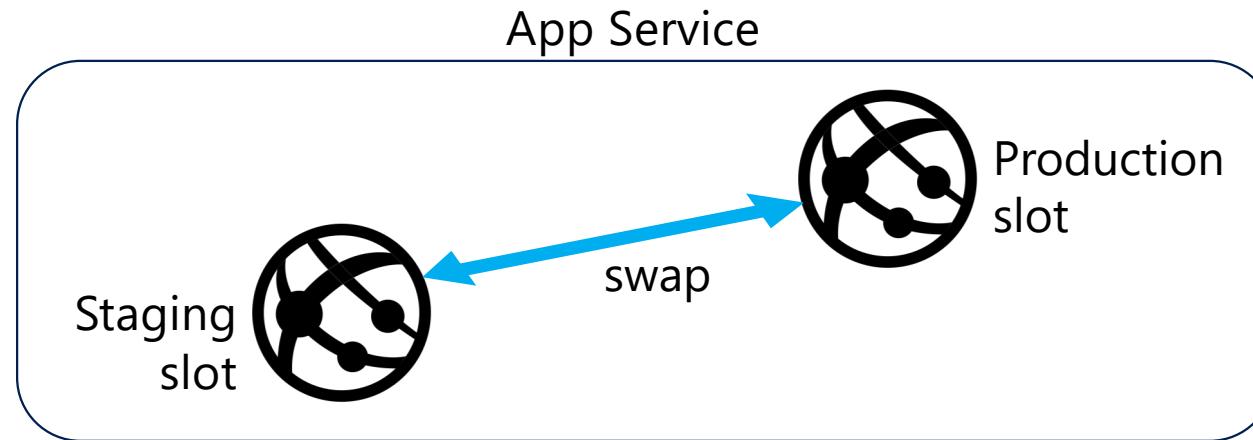


DEMO

Auto scale

Deployment slots

Deployment slots



Streamline dev, test and production deployment workflow

Swap staging and production with zero downtime

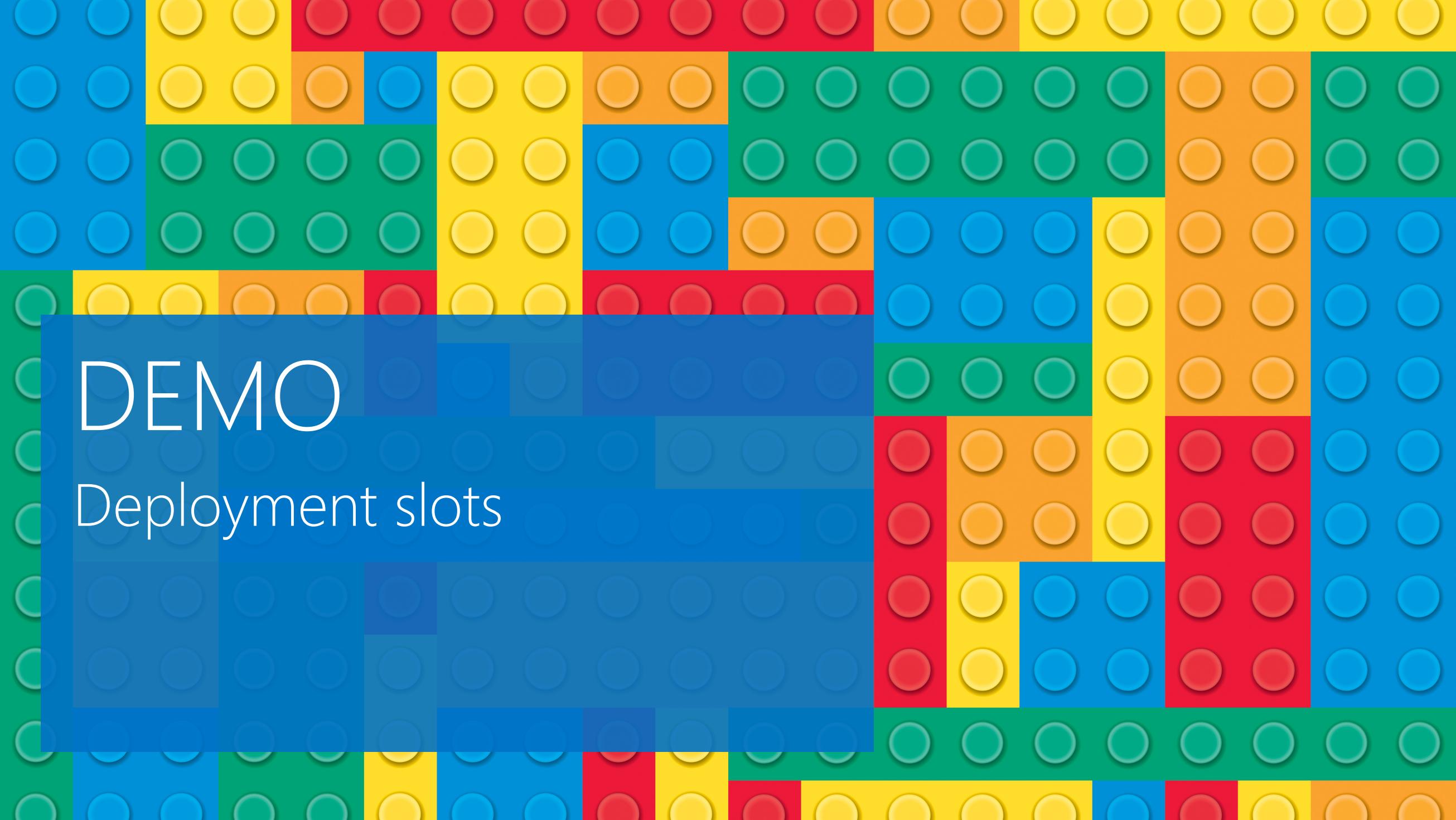
Instantaneous rollback to previous “last known good site”

Enables A/B testing, continuous deployment, staged publishing and much more



If you want to live in harmony with the rest of the world – avoid running load tests on different deployment slots of the same web app.





DEMO

Deployment slots

Auto heal

postavky-dev-web-api | Diagnostic Tools



Overview

Proactive Tools

- Auto-Heal
- Proactive CPU Monitoring

Crash Monitoring

Diagnostic Tools

Collect .NET Profiler Trace

Collect Memory Dump

Check Connection Strings

Collect Network Trace

Collect Java Memory Dump

Collect Java Thread Dump

Collect Java Flight Recorder T...

Network Troubleshooter

Support Tools

Metrics per Instance (Apps)

Metrics per Instance (App Se...

Application Events

Custom Auto-Heal Rules Proactive Auto-Heal History

Custom Auto-Heal Rules Enabled

On Off

1. Define Conditions



Request Duration



Memory Limit



Request Count



Status Codes

2. Configure Actions



Recycle Process



Log an Event



Custom Action

3. Override when Action executes (Optional)



Startup Time

4. Review and Save your Settings

Current Settings

No rule configured!

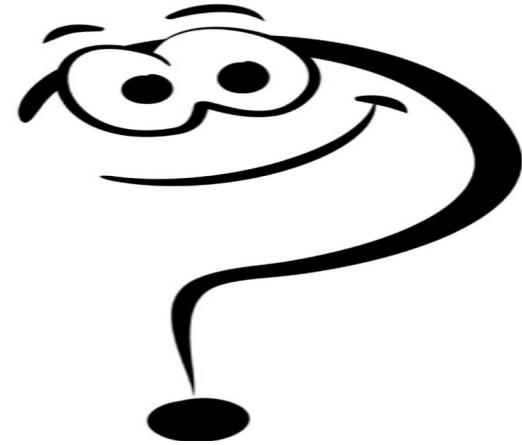
Save

Cancel

View All Sessions

Quiz

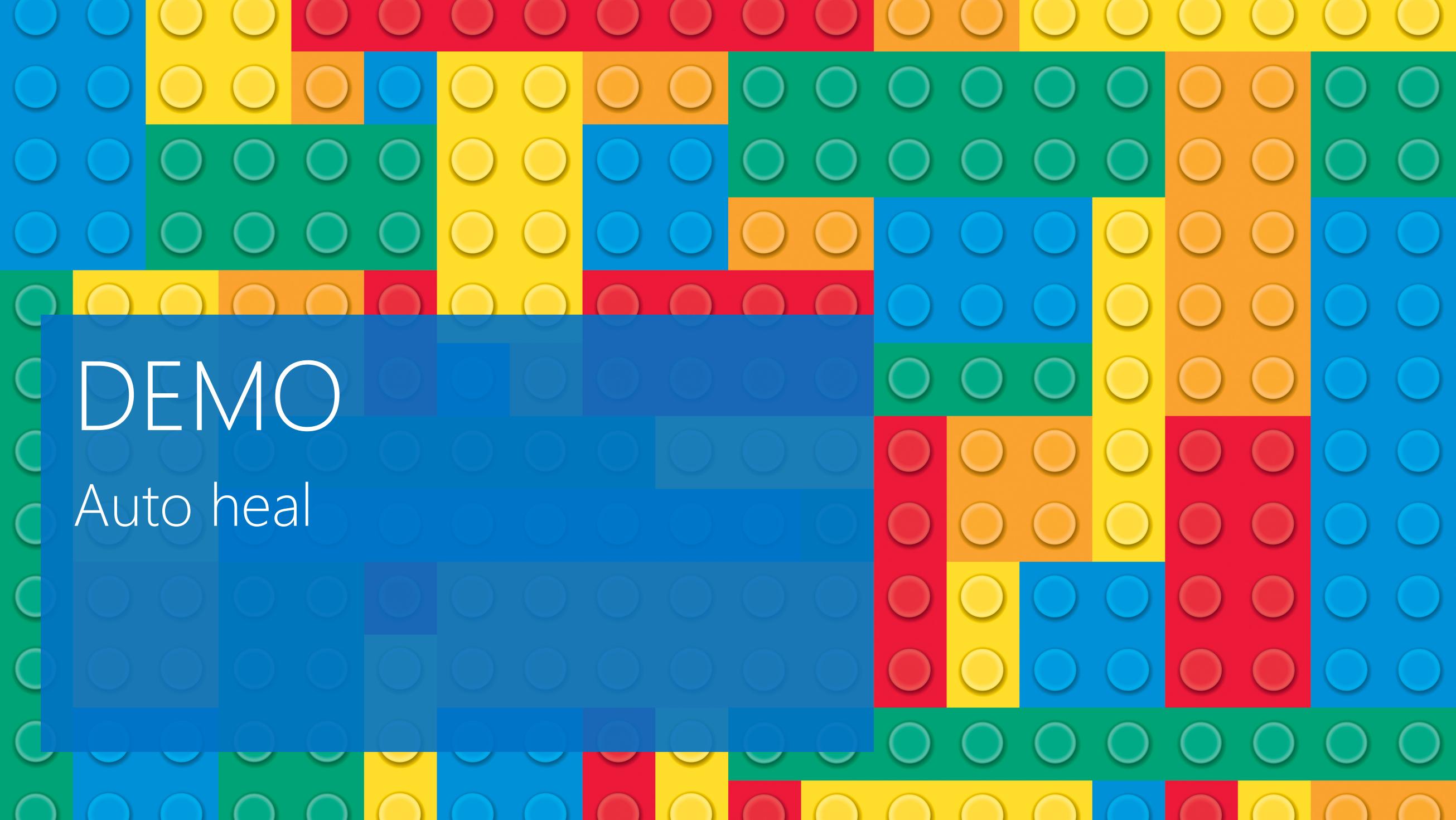
Why using auto heal can
kill your app?



Quiz

Why using auto heal can kill your app?

If you face an issue when recycling is not enough to fix your app, you will also face infinite recycling loop.



DEMO

Auto heal

Backup

What can I backup?

Web app content

Web app root folder and all folders underneath

Application database

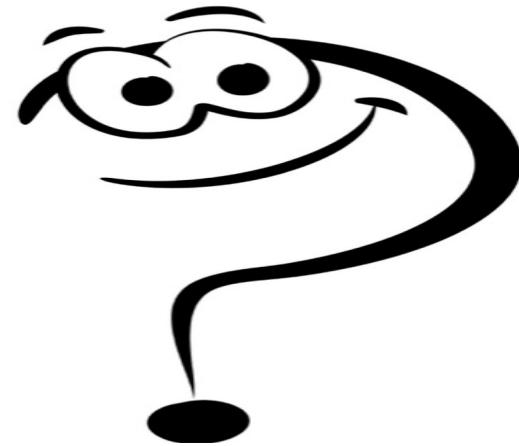
Only those application databases, which have connection strings in web app connection string settings, not in web.config

Configuration settings

Configuration settings of web app

Quiz

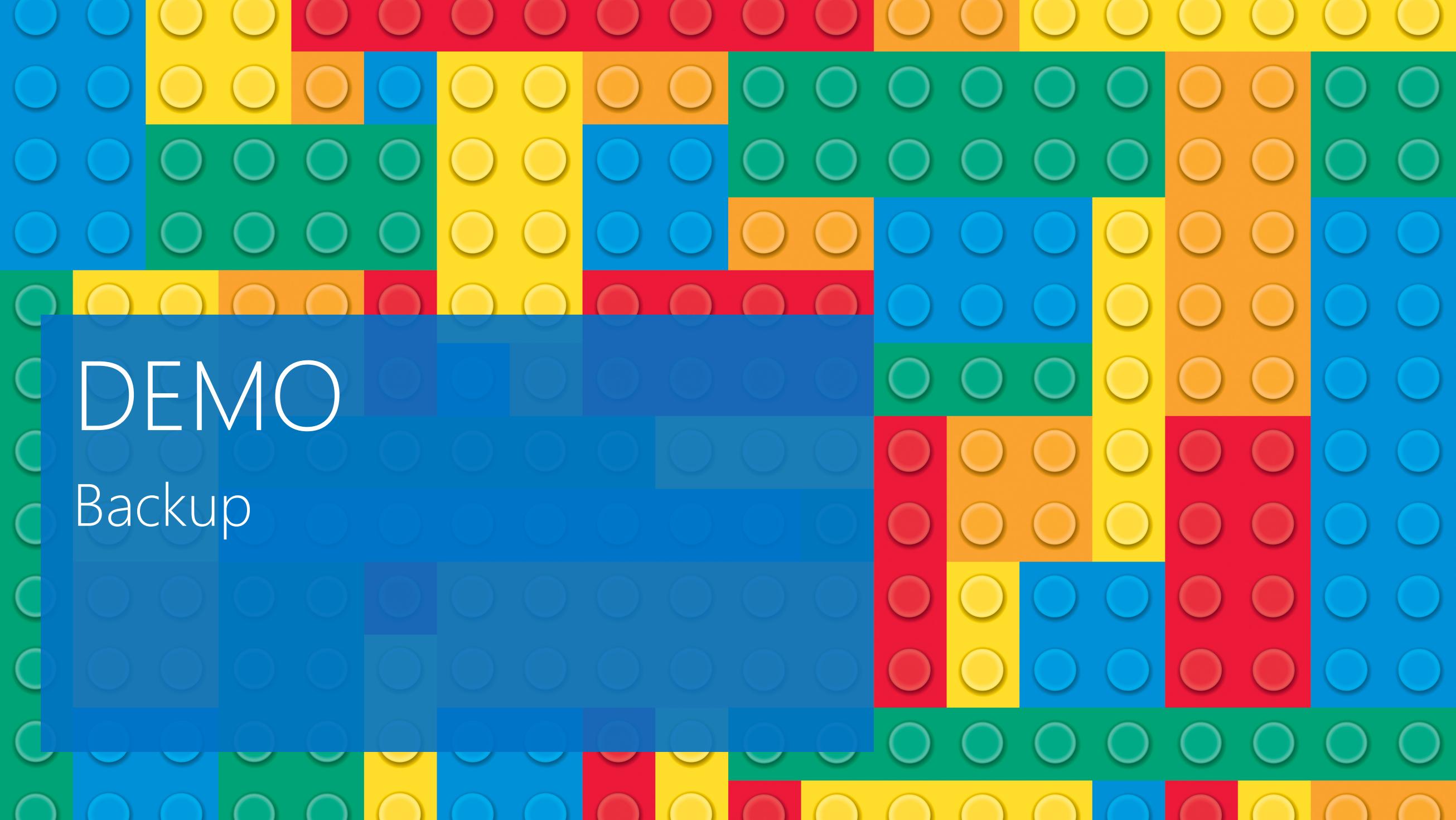
Why I'm not 100% happy
with backup?



Quiz

Why I'm not 100% happy
with backup?

Usually I put my unstructured content (pictures, video, etc.) into blob storage to avoid storage limit of web app pricing tier. There is no way to backup it using built-in backup feature.



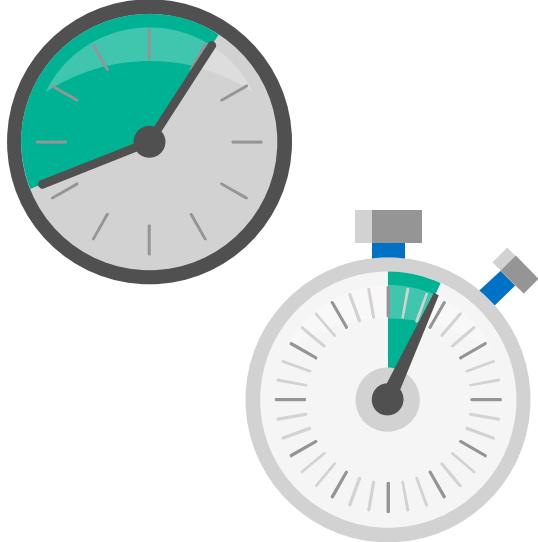
DEMO

Backup

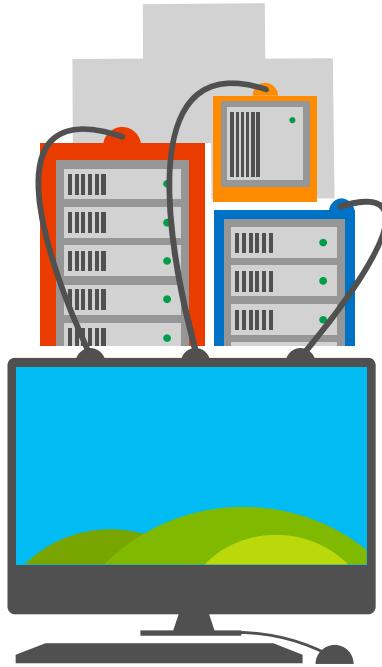
Azure Functions



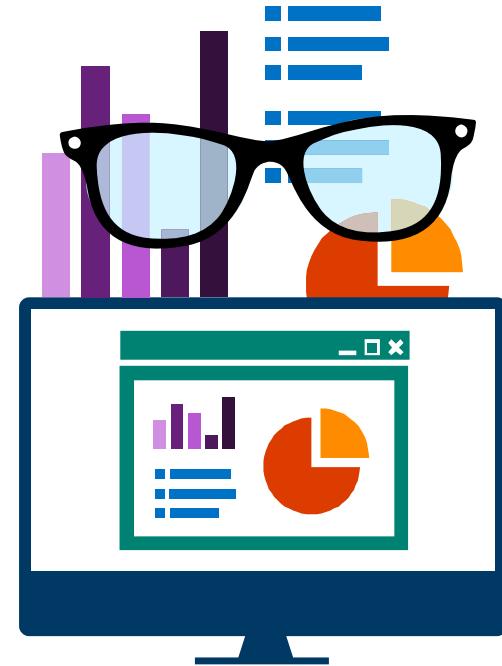
Benefits of serverless



Micro-pricing

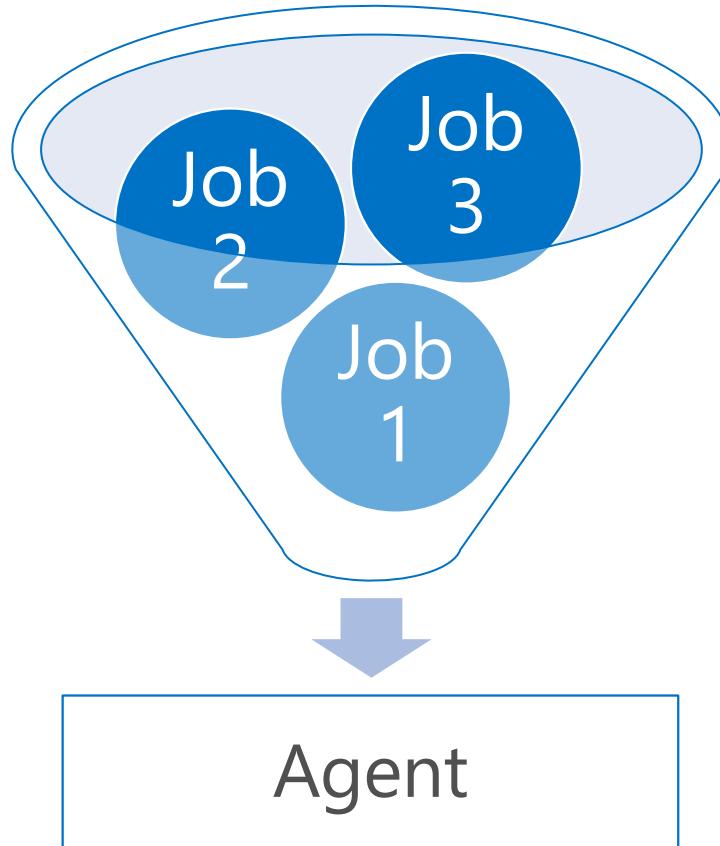


Ease of scale
(up &
down)



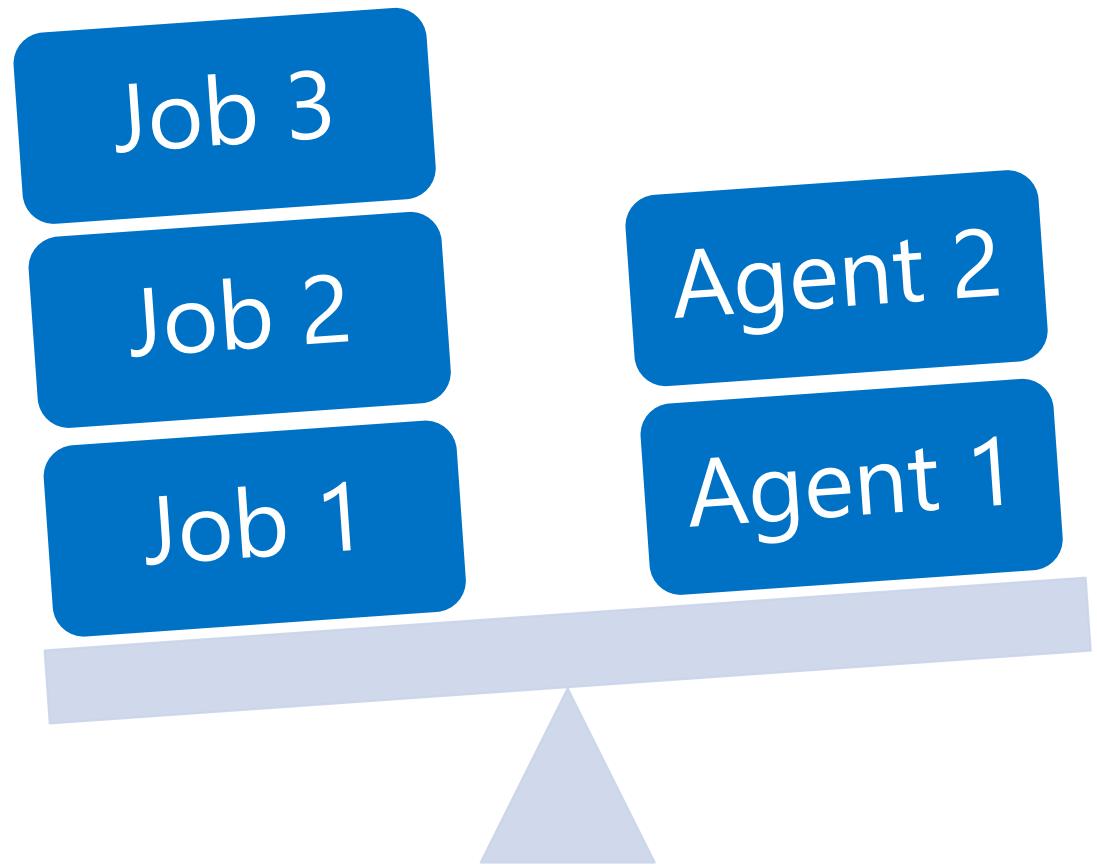
Manage less

Reserved



- Fixed CPU
- Fixed RAM

Serverless



- On-demand CPU
- On-demand RAM

Azure Functions

Event-driven on-demand custom code execution.

Code (run.csx)

```
1  using System.Net;
2
3  public static async Task<HttpResponseMessage> Run(HttpRequestMessage req)
4  {
5      log.Info($"C# HTTP trigger function processed a request. Request URI: {req.RequestUri}");
6
7      // parse query parameter
8      string name = req.GetQueryNameValuePairs()
9          .FirstOrDefault(q => string.Compare(q.Key, "name", true) == 0)
10         .Value;
11
12     // Get request body
13     dynamic data = await req.Content.ReadAsAsync<object>();
14
15     // Set name to query string or body data
16     name = name ?? data?.name;
17
18     return name == null
19         ? req.CreateResponse(HttpStatusCode.BadRequest, "Please pass a name on the query string or in the request body")
20         : req.CreateResponse(HttpStatusCode.OK, "Hello " + name);
21 }
```



Capacity planning

- Q: What will it cost to run a serverless app for 10K users?
- A: How will you calculate what it will cost to run a non-serverless app?
- A: What will it cost to wash all the windows in Seattle?

Capacity calculation example

Facts

- Each user spent 5 minutes on average on your website daily.
- Each user reads 10 articles daily.
- Each user generates 15 requests daily (10 articles + 5 utility requests).
- Each request takes 1 second on average.

Conclusions

- Each user consumes 1 sec per request.
- Each user consumes 15 secs per day.
- Each user consumes 450 secs per month.
- 10K users consumes 4.5M secs per month.

Performance

Consumption

- 1 CPU core
- Up to 1.5 Gb RAM
- Cold start
- Scale down to 0 instances

Premium

- Up to 4 CPU cores
- Up to 14 Gb RAM
- Pre-warmed instance
- Scale down to 1 instance

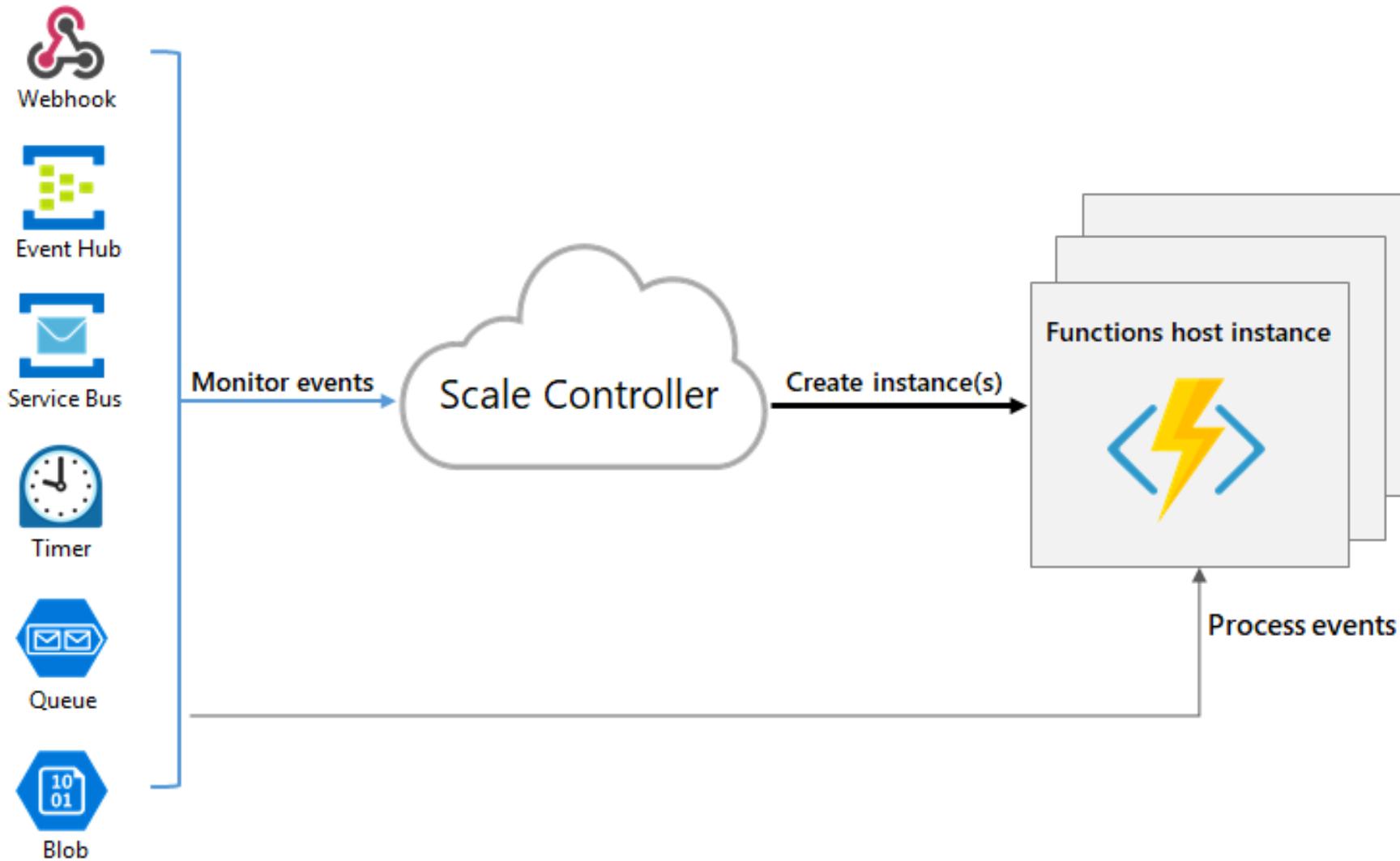
Azure Function Plan switcher

<https://aka.ms/premium-plan-sample>

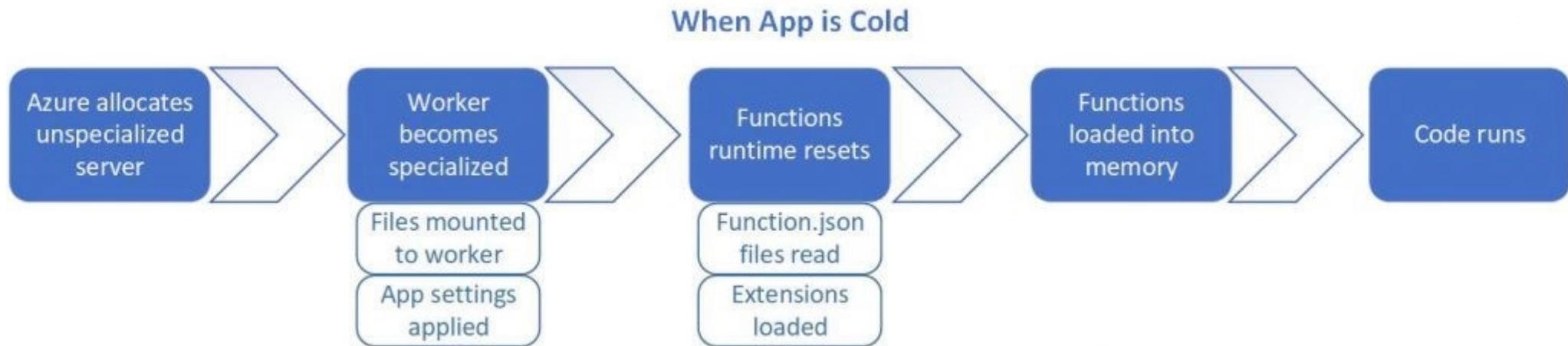
Understanding serverless cold start

<https://azure.microsoft.com/en-us/blog/understanding-serverless-cold-start/>

Performance – scalability

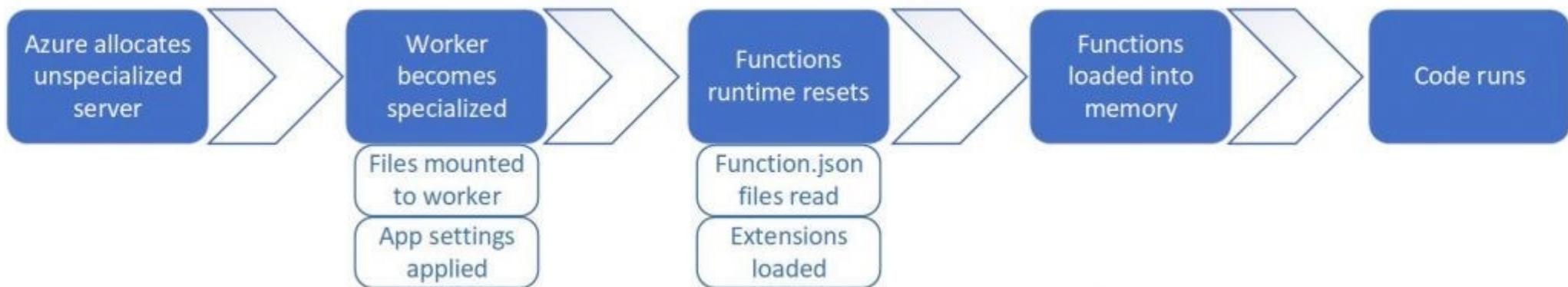


Performance – cold start

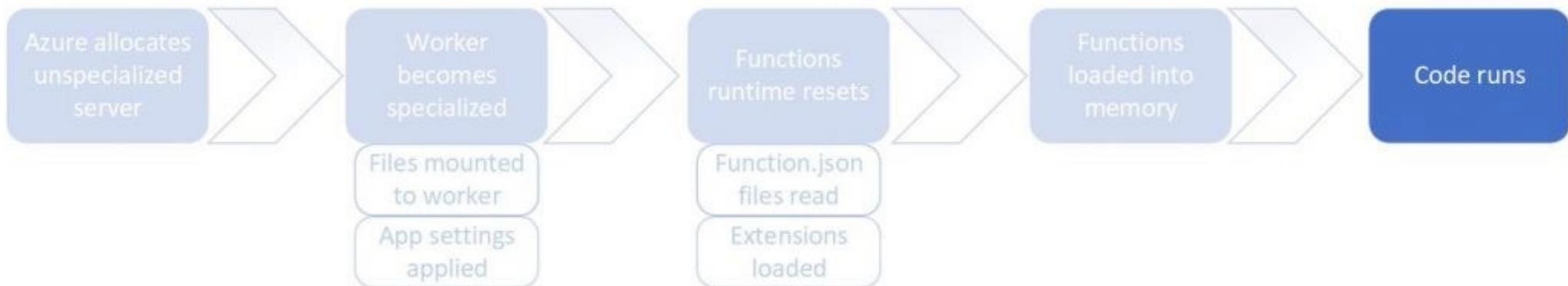


Performance – cold start

When App is Cold



When App is Warm



Questions?



Homework

Do (1)

Create automation using both AZ CLI and Azure PowerShell CMDlets. For each script prepare the parameters file(s) that script will be able to parse.

Do (2)

Script that can create Linux based App Service for Containers.

Input parameters:

Region

Name

Pricing tier

Nodes in web farm

Docker Hub image to be used

Deadline

Recommended – by the end of the day 23.08.2022



Maximum – by the end of the day 26.08.2022

