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GO Serverless with Azure Functions

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Hi there!

- Former MSP
- Founder of DotNetSicilia
- Azure MVP since 2015
- Used to work on cloud projects
- Used to work as fullstack developer
- I have an open issue with UI

@andreagiunta63

Agenda

- A quick brief on cloud
- What is Serverless
- Introduction to Azure Functions
- Demo (Hello from the clouds)
- What should i need?
- Demo
- Q&A

What is cloud computing

"Cloud computing is a type of Internet-based computing that provides ***shared computer processing*** *resources and data to computers and other devices* ***on demand****. It is a model for enabling ubiquitous,* ***on-demand access to a shared pool of configurable computing resources*** *(e.g., computer networks, servers, storage, applications and services), which can be* ***rapidly provisioned and released*** *with minimal management effort. "*

From "Wikipedia".

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What is cloud computing

Cloud computing gain access to hardware and software resources, based on software architecture needs.

The main benefits are:

- Scaling and redudancy
- Vertical scaling
- Horizontal scaling
- Geographic redundancy
- Cost
- Pay as you go plans
- Elastic management of resource

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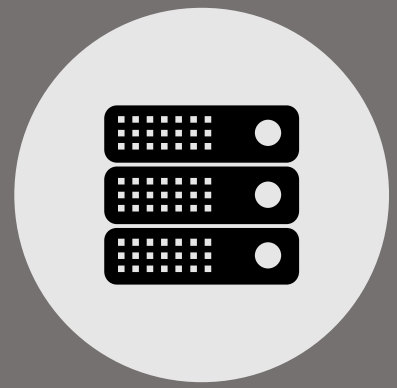
Why?

Mainframe
Monolithic
Client/Server
3 Tier
Component
RAD
Distributed
SOAP
SOA
Web
REST
Mobile
Microservices
Containers
~~Serverless~~

Physical Machines



Virtual Machines

Cloud Infrastructure

Born in the Cloud

Build on a developer platform (PaaS)

1990 2000 2010 2016

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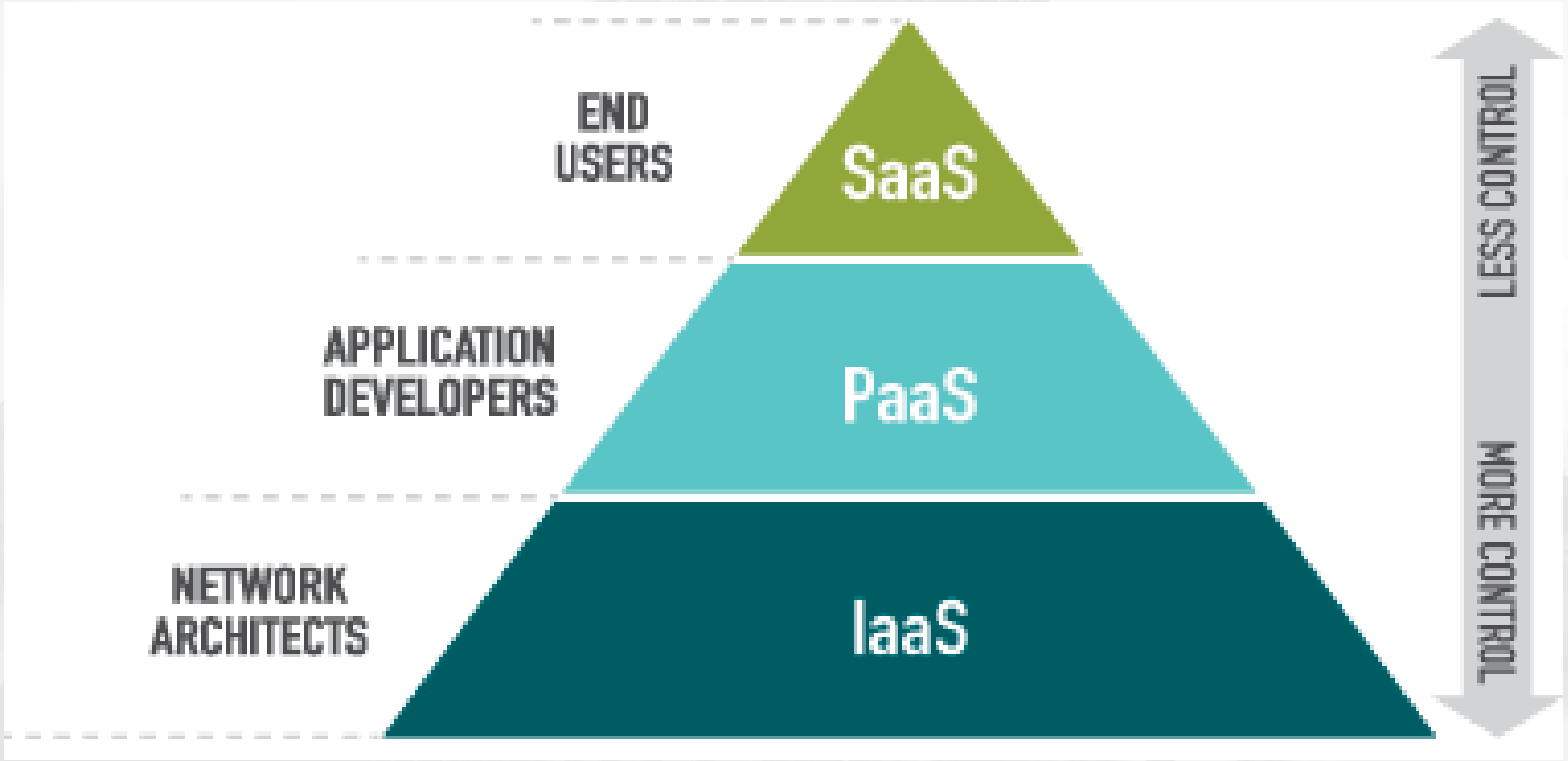
How


END USERS
SaaS
APPLICATION DEVELOPERS
PaaS
NETWORK ARCHITECTS
IaaS
LESS CONTROL
MORE CONTROL

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How

Cloud computing services are defined as follow:

- **Infrastructure as a Service (IaaS)**

  Provide storage, virtual machines, network

- **Platform as a Service (PaaS)**

  Provide middleware to host and deploy application

- **Software as a Service (SaaS)**

  Usually is the goal. Our software, or third-party software developed on top of a cloud infrastructure

What is Serverless?

Nothing to get scared about, really.

End user (developer) doesn’t have to think about were the application will run (on virtual hardware level)

In serverless your computation is handled and resolved at the moment of the request

Serverless and Azure Functions

Serverless services can be placed inside Function as a Service segment inside PaaS

Serverless architecture allow us to make improve a decomposition of our backend and initialize resources only for our needs, running our code on demand

Azure functions is, of course, a FaaS that allow your app to run on demand

How can I write and deploy an AF?

Great news, after last //BUILD we have two choices

- The function editor on azure portal
- Visual studio

Trigger the function

- Blob Trigger
- Event Hub Trigger – It responds to whatever events are delivered to Azure Event Hub. Useful for workflow processing and IOT Scenarios.
- Generic Web hook – It process web hook Http requests from any of your services which supports web hooks.
- GitHub Web hook – It responds whenever any event occurs in your GitHub repositories.
- Http Trigger – By using the Http Request you can trigger the execution of your code.
- Queue Trigger – Immediate response to that messages which arrives in Azure Storage queue.
- Service Bus Queue Trigger – This helps you to connect with your other azure services. Basically, it connects your code to azure services by listening to message queues.
- Service Bus Topic Trigger - This helps you to connect with your other azure services. Basically, it connects your code to azure services by subscribing to topics.
- Timer Trigger – This feature template helps you to clean up the batch tasks and predefined schedules

What if i want to make something big?

Call a Function technically is like calling an API, main difference is architecture

We can also mix these architecture in same scenario

The real question is how big can I go with serverless?

Authentication

Requests are authorized via the function api code, but our users should authenticate themselves.

But, in a serverless scenario how i should remember my user status?

Azure functions is ontop of Azure App Service, but we can also need custom authentication

JWT – Json Web Token

A JWT is made by three sections

- Encrypt algorithm information
- Claims
- Signature

I suggest this kind of token for custom auth because it contains all information on user (claims)

Sql server

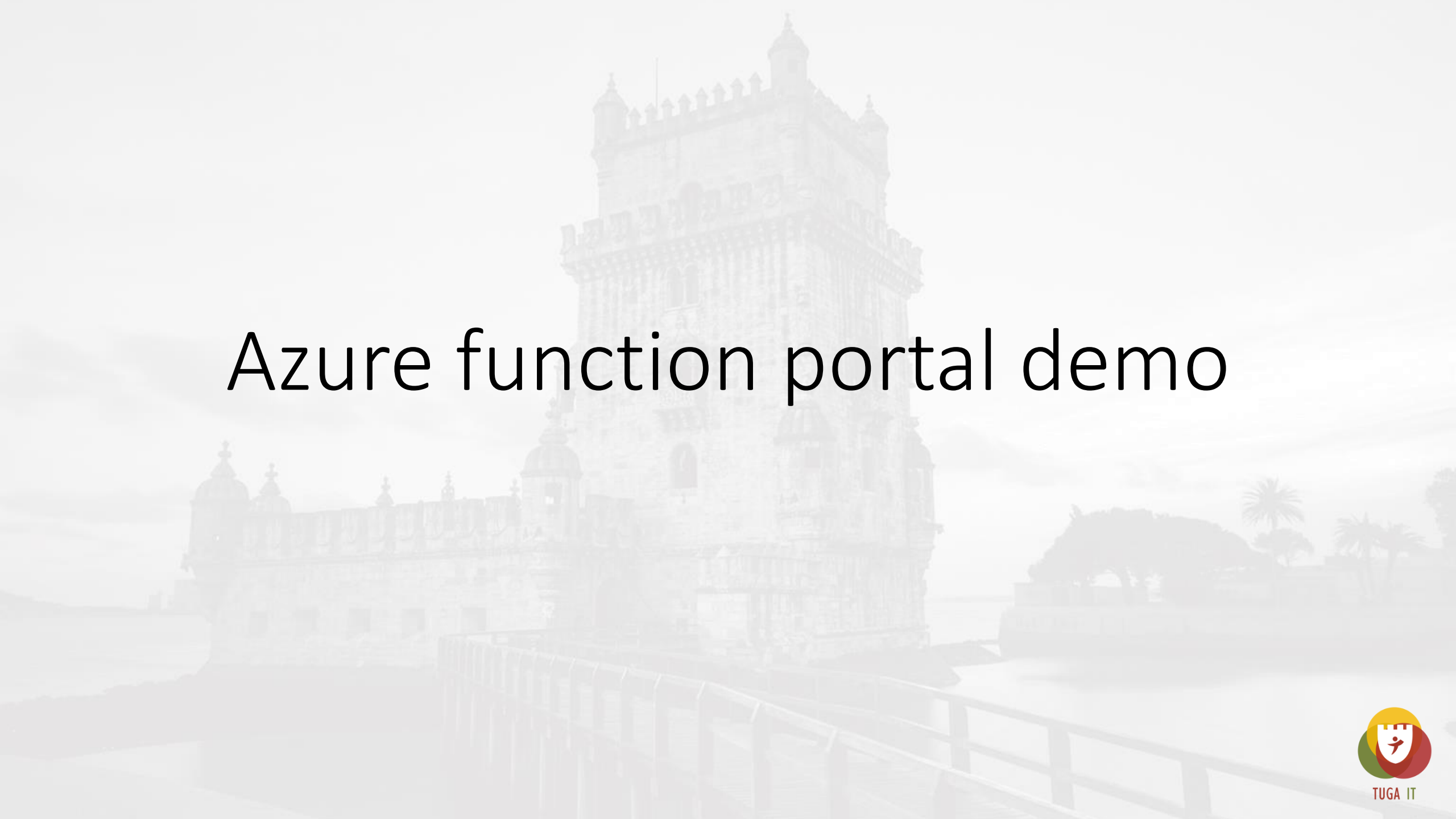
An application must access data, how can i access data on Azure functions?

We can set connection string atop of the functions

So we can connect to any sql server we should need

Let’s see where this can be configured and how can be used

Azure function portal demo



Decomposition

Since microservices and serverless are similar coincide, we can use a few techniques from «both» world

Decomposition is a common base technique to define our architecture, the main options are

- By name (a service for each entity: e.g. users, addressbook)
- By verbs (a service for a business operation: e.g checkout, login)

Our service actors

- Vehicle
- Assignee
- Maintenance note

With following relations

- Vehicle 1-N Maintenance note

I’ll choose a verb decomposition

Vehicle

- Id
- Name
- Model
- Type
- License number
- Fuel type

- Function to access and insert new vehicle

Assignee

- Id
- Full name
- Mobile phone
- Email

- Function to access and insert new Assignee

Maintenance note

- Id
- Date
- VehicleId
- Note
- Cost

- Function to access and insert new note

Demo code

A few references

- Authentication on Azure Functions
  - https://contos.io/working-with-identity-in-an-azure-function-1a981e10b900
- Availability for VS 2017 preview 3
  - https://blogs.msdn.microsoft.com/webdev/2017/05/10/azure-function-tools-for-visual-studio-2017/

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PLEASE FILL IN EVALUATION FORMS

FRIDAY, MAY 19th

https://survs.com/survey/cprwce7pi8

SATURDAY, MAY 20th

https://survs.com/survey/l9kksmlzd8

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