

How to create recurring and long running jobs in Dynamics 365

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Pedro Azevedo

14 years in Microsoft technologies

- 6 years in Web, Desktop e Mobile
- 8 working with CRMs

Head of Business Applications at Findmore (Nearshore Portugal)

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"If having a coffee in the morning
doesn't wake you up, try to delete a
table in production instead"

*unknown
developer*

Agenda

Microsoft Azure

Azure App Service

Azure Service Bus

Integration of WebJobs and Service Bus with Dynamics 365

Microsoft Azure





Microsoft Azure

2nd largest Public Cloud Provider

50 Azure regions, more than any cloud provider.

Microsoft Bet on Azure is massive.
Huge effort in migrate customers from on-prem to Azure.

Why Azure?

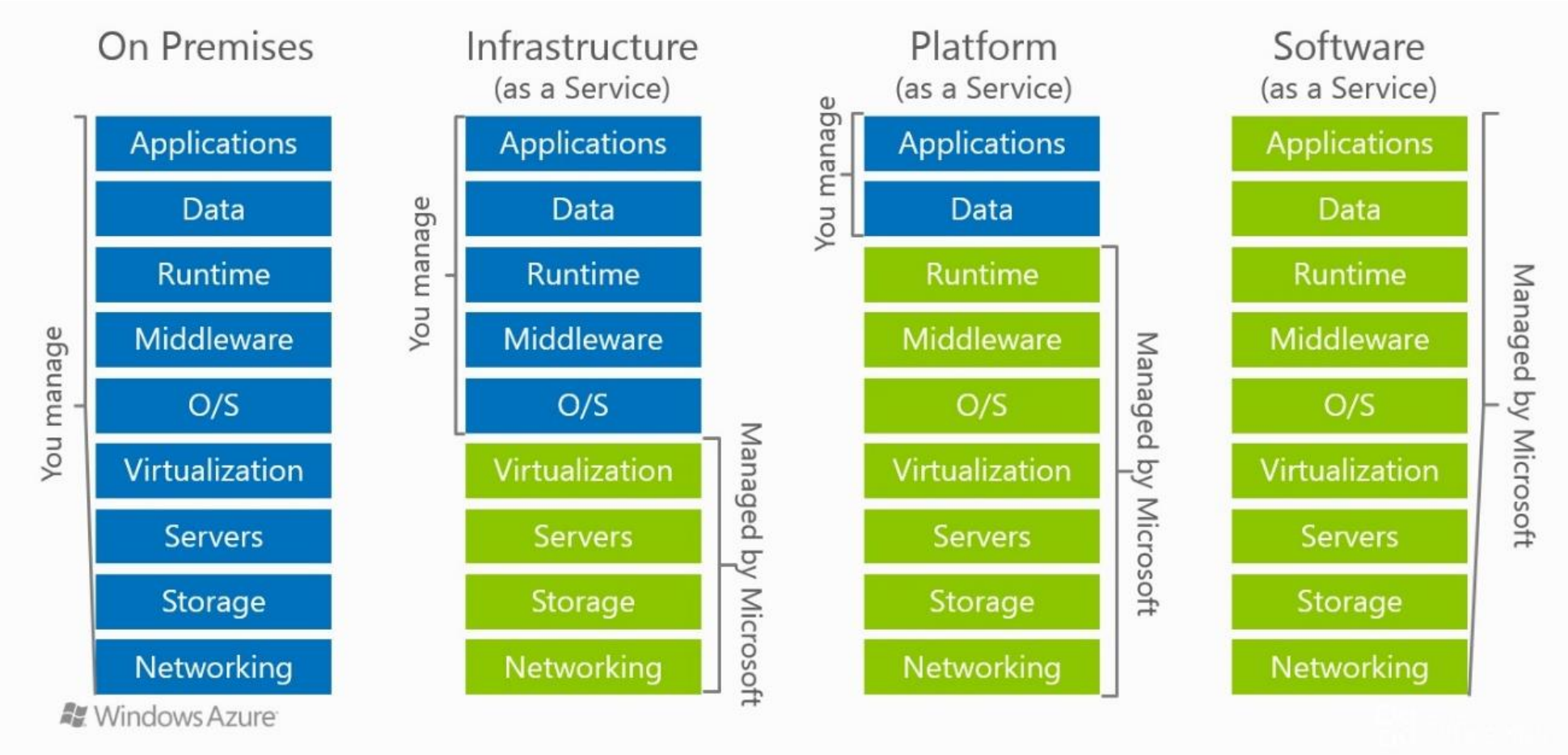
Huge demand from customers (Starting now in some geography's like Portugal). Huge across Europe and USA.

Fun to work with! Every project is a different project and we can use new services and/or new feature of already exiting services

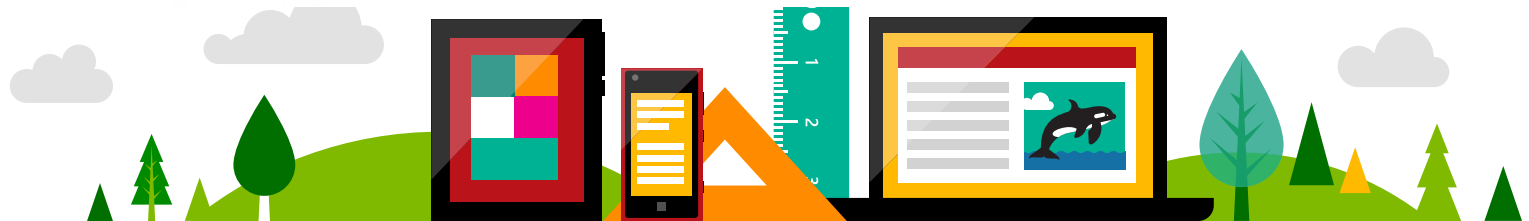
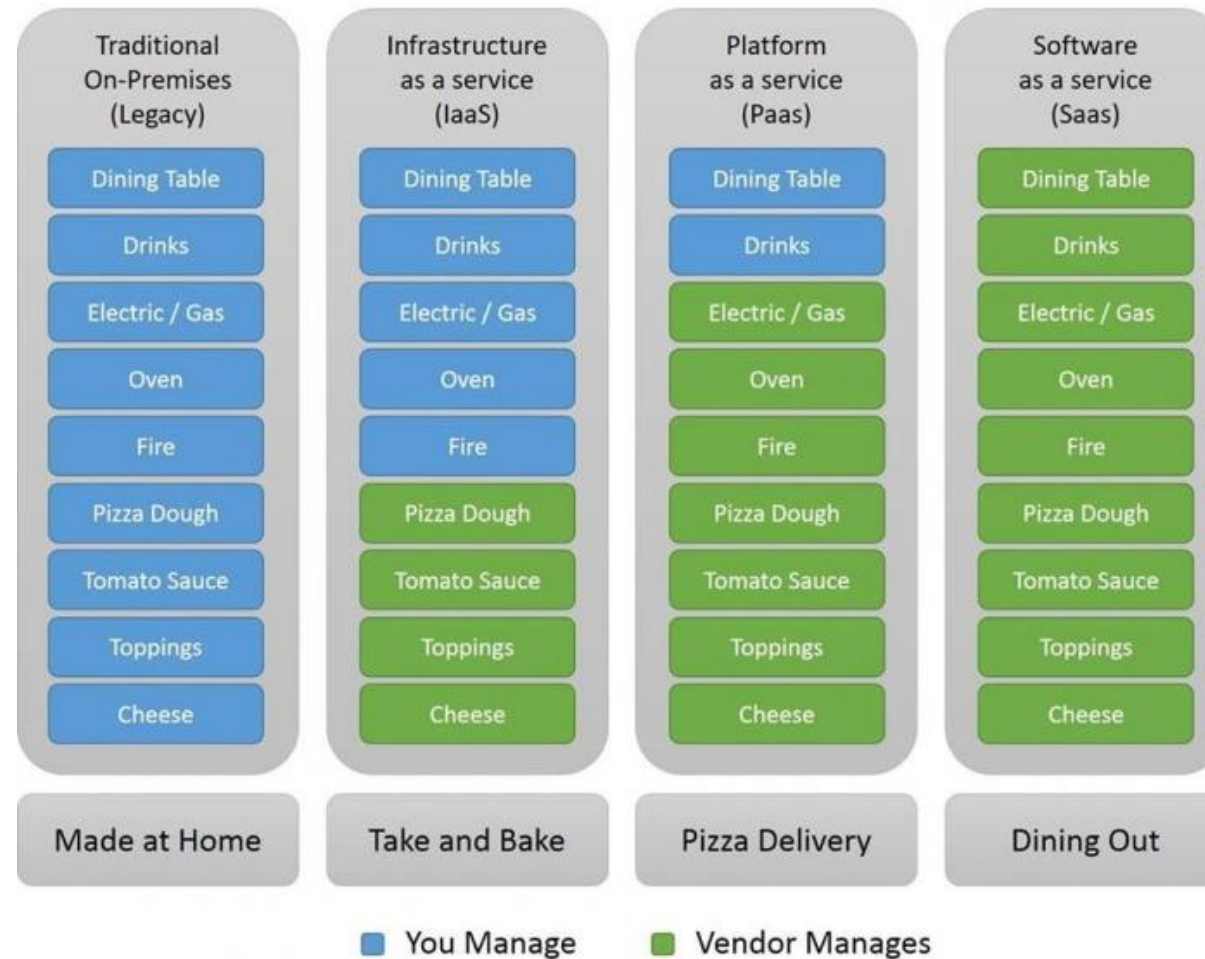
Pay for what you use



Cloud Models

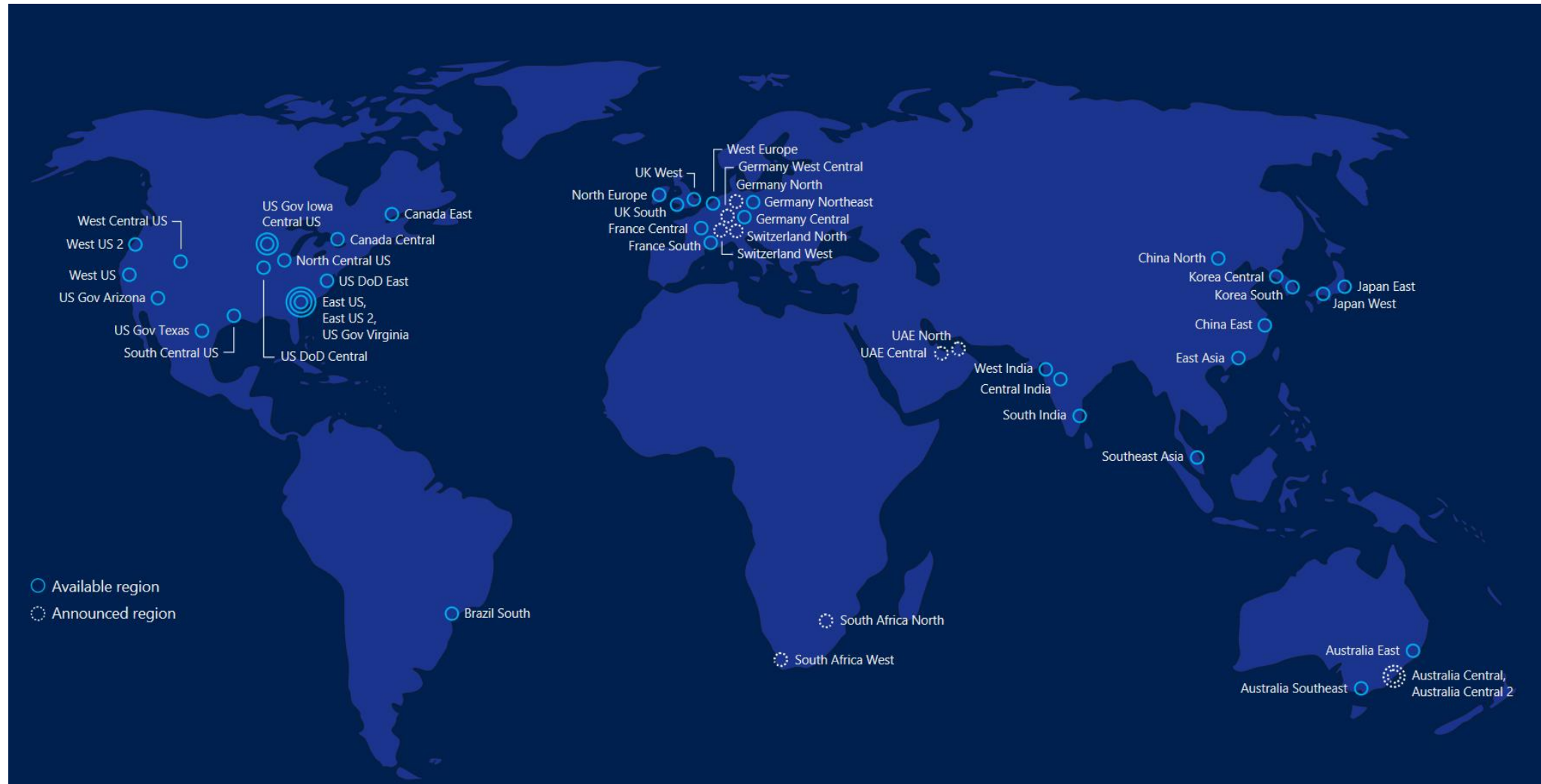


Cloud Models – a funnier way!!!



Azure Regions

50 Azure Regions, more than any other cloud provider



Special Azure Regions

Germany Northeast

Germany Central

China North

China East

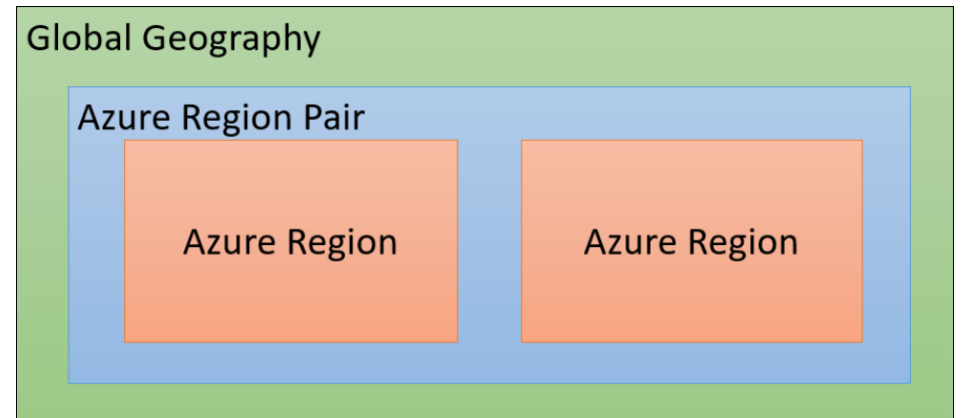


Pair Azure Regions

Azure Regions in a Pair have direct connections which bring additional benefits to use them together.

Each Azure Region in a pair are “always located greater than 300 miles apart when possible”.

Not all services are available in all regions



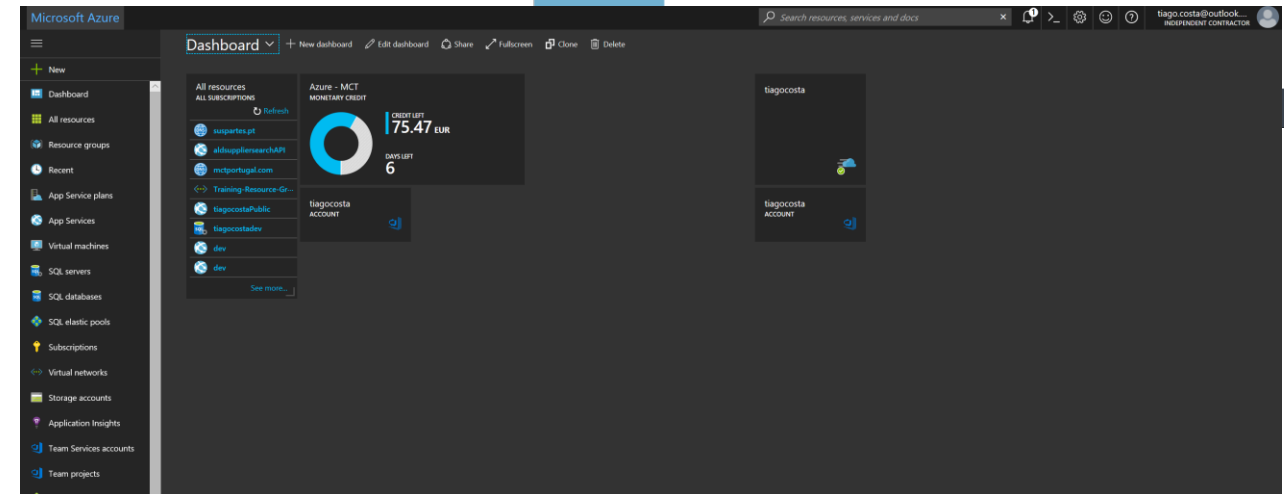
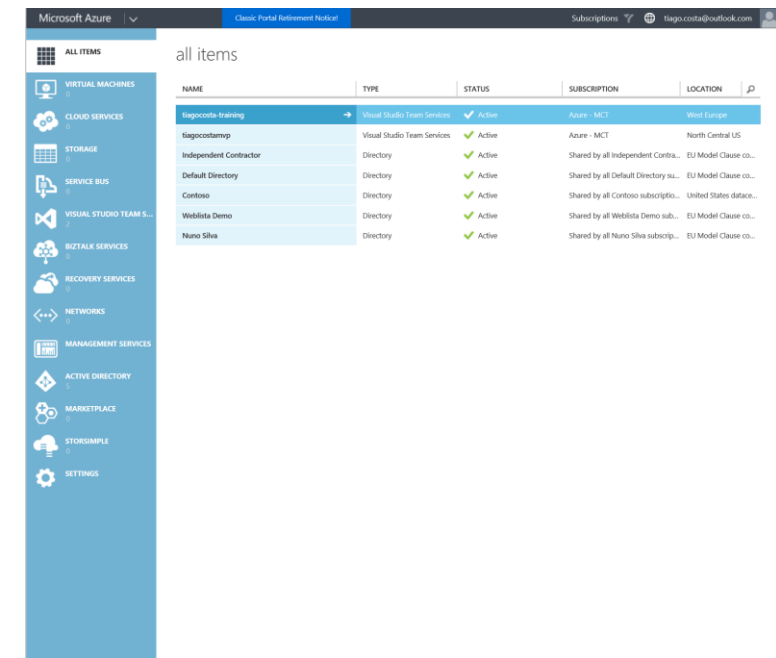
Azure Portals

OLD Portal – Retired on 8 Jan 2018!!!!

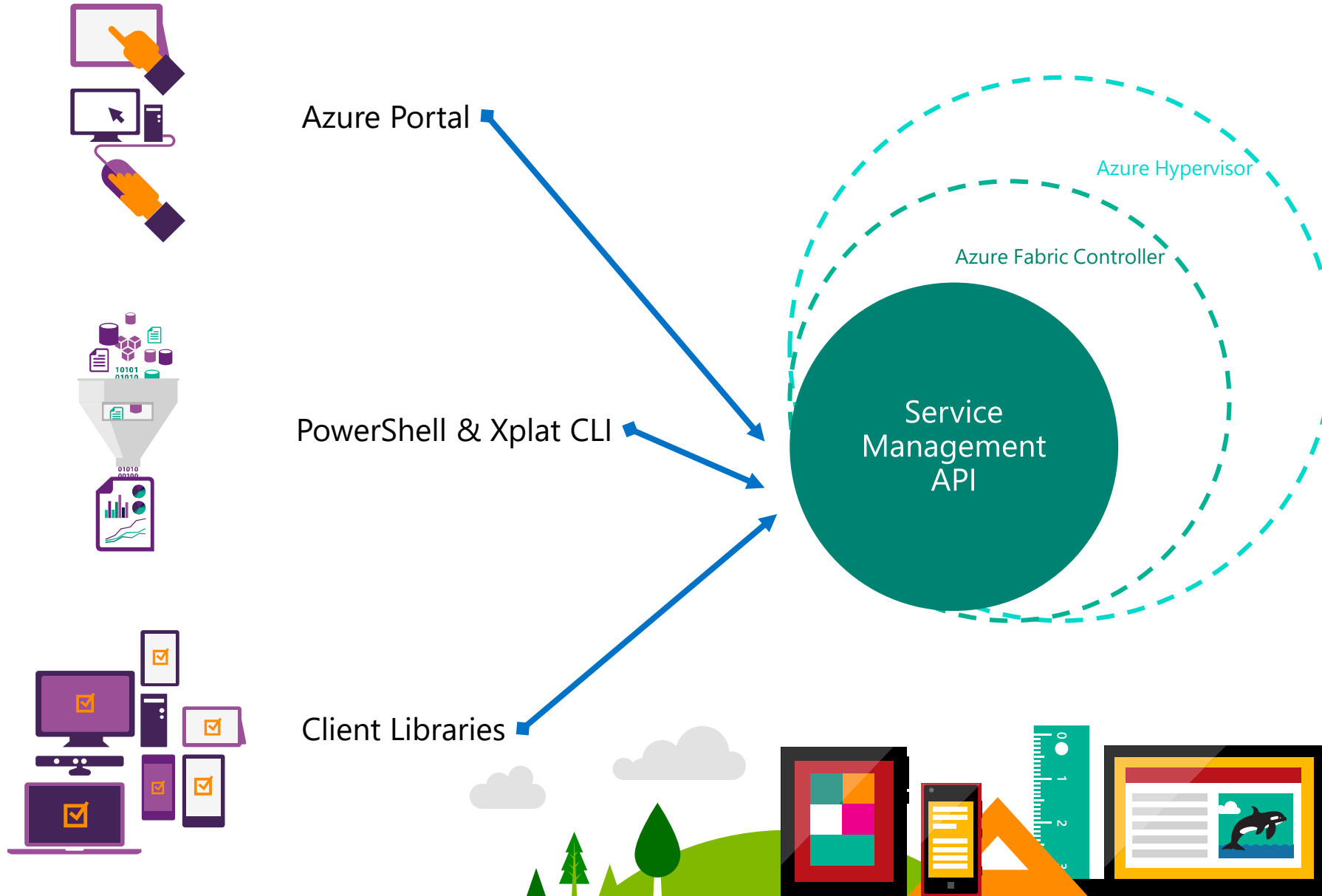
<https://manage.windowsazure.com>

Current Portal

<https://portal.azure.com>



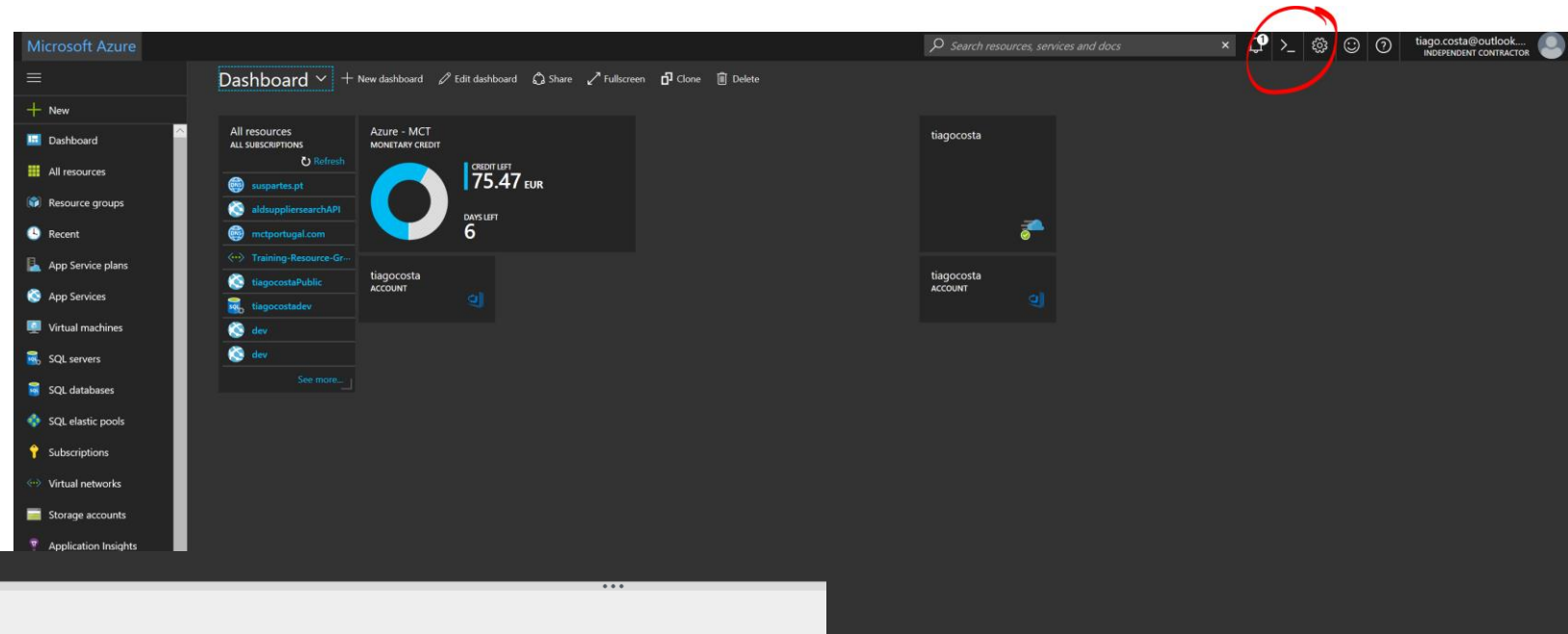
Azure Portals



Cloud Shell

PowerShell (Windows)

Bash (Windows and Linux)



```
More services >
PowerShell v | [power icon] ? [gear icon]
Requesting a Cloud Shell.
PowerShell may take up to a minute...Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell (Preview)

Type "dir" to see your Azure resources
Type "help" to learn about Cloud Shell

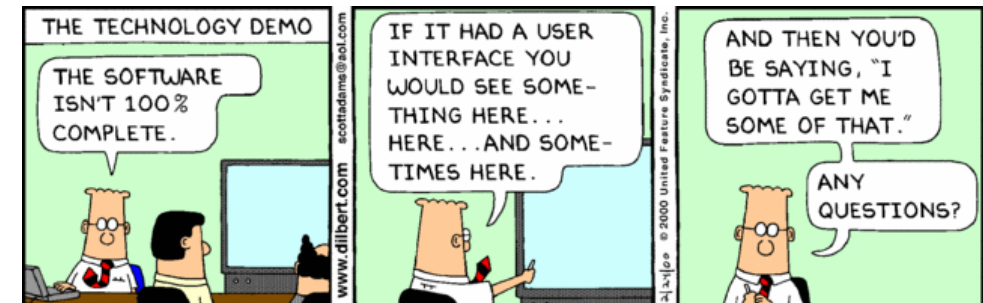
VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
Azure:\
PS Azure:\> [cursor]
```



Azure Portal

Demonstration

<https://portal.azure.com>



ARM Templates

Resource

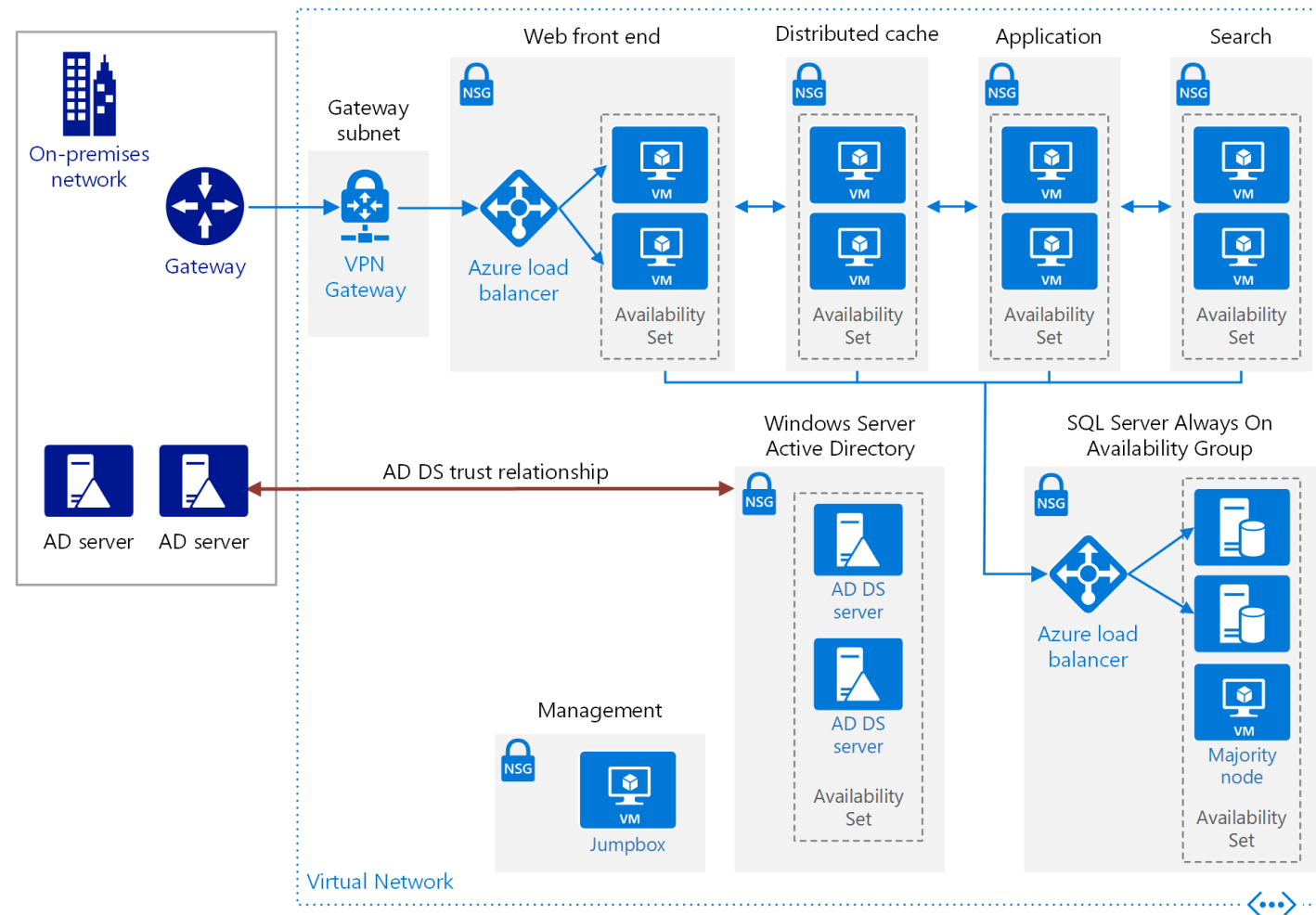
Resource Group

Declarative JSON template

```
"resources": [  
  {  
    "apiVersion": "2016-01-01",  
    "type": "Microsoft.Storage/storageAccounts",  
    "name": "mystorageaccount",  
    "location": "westus",  
    "sku": {  
      "name": "Standard_LRS"  
    },  
    "kind": "Storage",  
    "properties": {  
    }  
  }  
]
```



IaaS Architecture: SharePoint Farm



Resources

Microsoft Docs - <https://docs.microsoft.com/>

Azure Reference Architecture - <https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/>

GitHub

Template Building Blocks - <https://github.com/mspnp/template-building-blocks>

Azure Visio Stencils - <https://www.microsoft.com/en-gb/download/details.aspx?id=41937>



Azure App Service



Azure App Service

Scalable platform to host Web Application

Windows or Linux support

Integration with Development tools like Visual Studio, Eclipse, Visual Studio Team Services, GitHub, ...

Open platform for many different development languages

Standard domain name: [http/s]://APPNAME.azurewebsites.net



Features

WebJobs

AlwaysOn

Custom domain names

Autoscaling

Deployment Slots

Easy setup for CI/CD

Easy integration with other Azure Services like: CDN, Traffic Manager



App Service plans

Free (Shared compute)

Shared (Custom domains)

Basic (Dedicated compute, Up to 3 Instances)

Standard (Auto Scaling, Up to 10 Instances, Slots, Traffic Manager, Daily backups)

Premium (Up to 20 Instances)

PremiumV2 (SSD and faster CPUs)



Web Deploy protocol

WebDeploy simplifies deployment of Web applications and Web Sites to IIS servers by providing a standard package format

Packages can be installed manually using IIS Manager, command line tools or PowerShell

Packages can be remotely installed by using the IIS instance remote deployment service

Visual Studio can deploy a web application to a Web Deploy endpoint



App Settings

Applications settings and connections strings can be configured in the Azure Portal

Connection strings

ApplicationContextDB	downs.net,1433;Initial Catali X	SQL Database
Name	Value	SQL Database

App settings

WEBSITE_NODE_DEFAULT_VERSION	0.10.32
ITEM_COUNT	13
API_KEY	waasowu1229847pedju
Key	Value



WebJob Types

Continuous

- Starts immediately when the WebJob is created
- Runs on all instances that the web app runs on
- Supports remote debugging

Triggered

- Starts only when triggered (Manual or Schedule)
- Runs on a single instance that Azure Load Balancer selects
- Doesn't support remote debugging



WebJob – Supported types

.cmd, .bat, .exe (using Windows cmd)

.ps1 (using PowerShell)

.sh (using Bash)

.php (using PHP)

.py (using Python)

.js (using Node.js)

.jar (using Java)



Azure App Service



Demonstration

Create a Web Job in Azure App Services

Autoscaling

Scaling rules: Schedule or Based on performance metrics

Performance Metrics

- CPU
- Memory
- Queue

Can setup a Min and Max instance threshold



Azure App Service

Demonstration

Autoscaling a Web Application

Azure Service Bus



Overview

Managed messaging Infrastructure

- Massive in scale
- Completely managed
- Allow to scale out applications (Will scale when your application grows)

Allows decoupled components to communicate asynchronously and synchronously



Service Bus Namespaces

Logical group of Service Bus service instances

- Scopes your resources to provide a common and predictable address
- Provides management credentials to use for operations



Service Bus Features

Queues

Topics

Relays

Notification Hubs

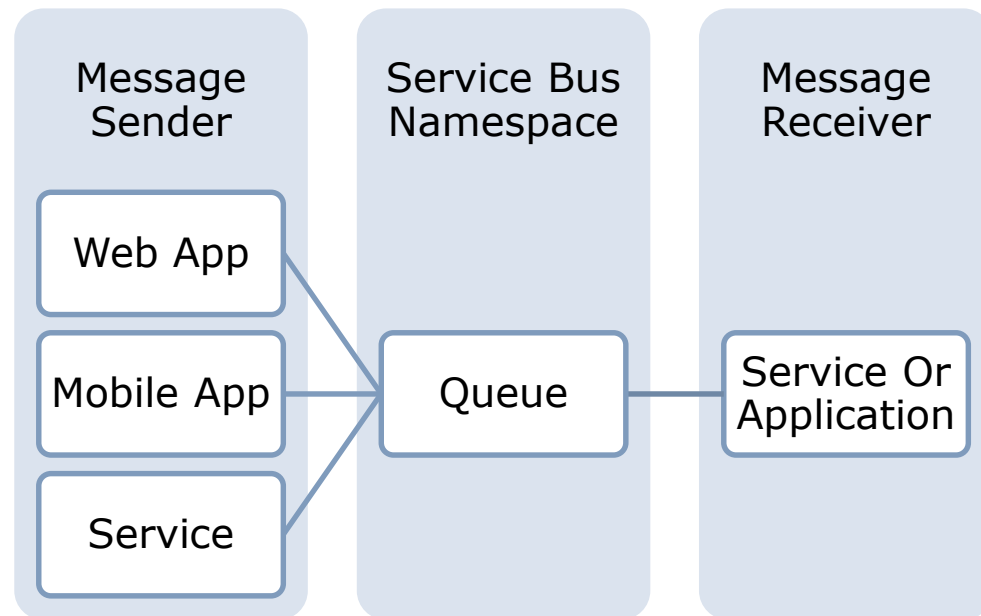


Queues

Service Bus queues offer a brokered messaging communication model

Distributed applications can share messages in a First In First Out (FIFO) pattern

Individual messages are only received by one message consumer



Queue Message Delivery

Service Bus queues provide a queuing mechanism with tight control on the order and delivery of messages

- Messages will appear only once
- Messages are processed using the FIFO pattern
- Message locks can be renewed
- Supports transactions



Overview

Service Bus queue messages consist of few major parts

- Body
 - The body can be any serializable object or a stream
 - The DataContractSerializer is used to serialize the complex object
- Label
 - Simple text label
- TimeToLive
- Properties
 - Dictionary of properties that can be used by your specific consumers.



Service Bus Relay

Relays provide a mechanism to connect distributed client applications or cloud services to a projected on-premises endpoint

- It allows for unidirectional or bi-directional communication
- It relays messages directly to an endpoint without any brokering of the message

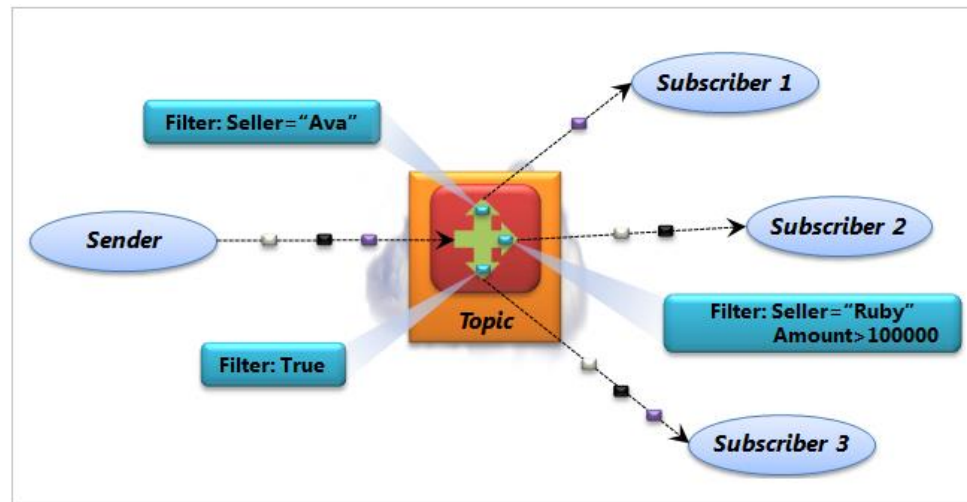
Applications establish an outbound connection to the relay and the relay manages the transport of the messages



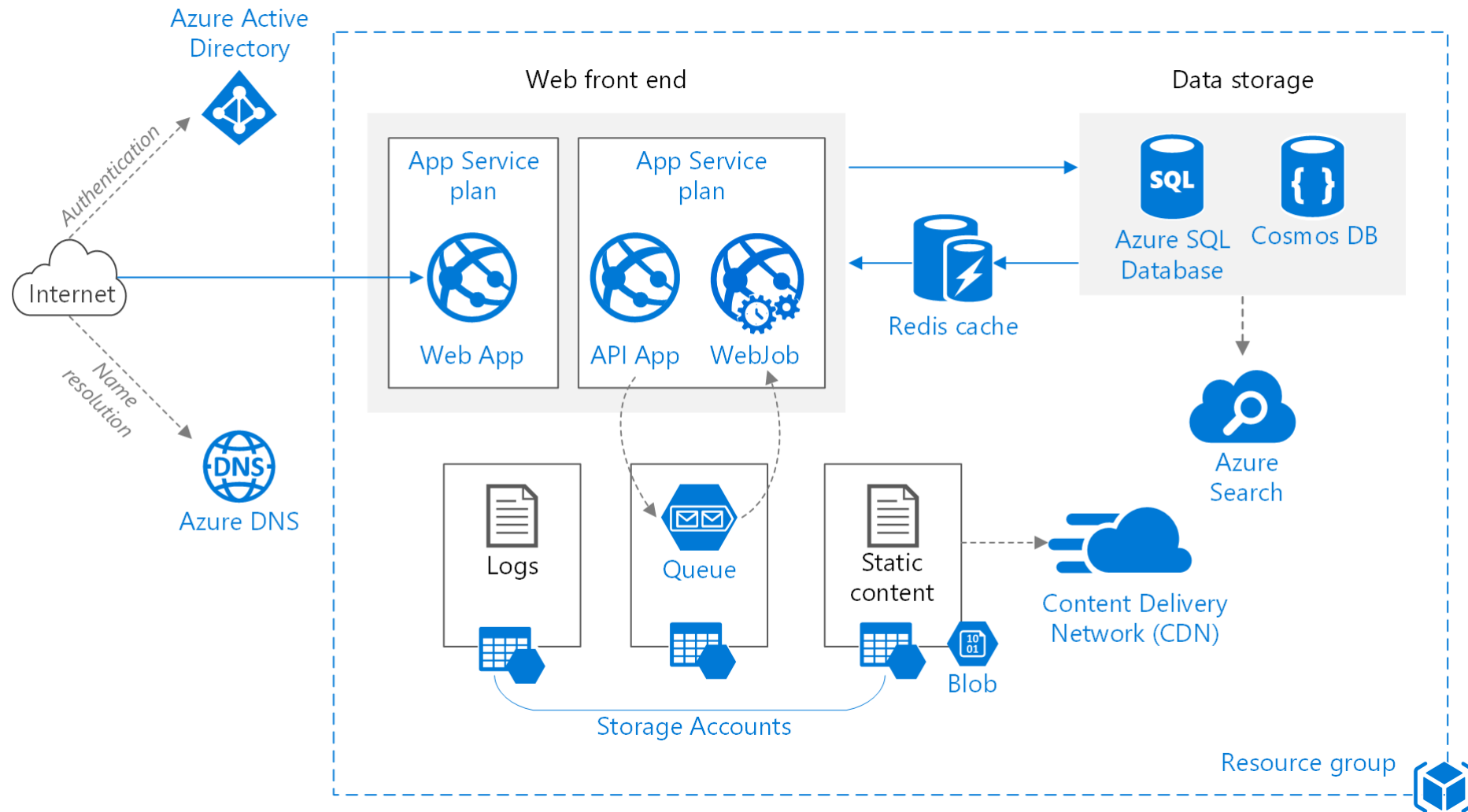
Service Bus Topics

Similar to Queues

Sender submit messages, but topics enable each receiving application to create its own subscription and optionally define a filter.



Service Bus Queues Architecture



Azure Service Bus

Demonstration

Service Bus Queues

Integration of WebJobs and Service Bus with Dynamics 365

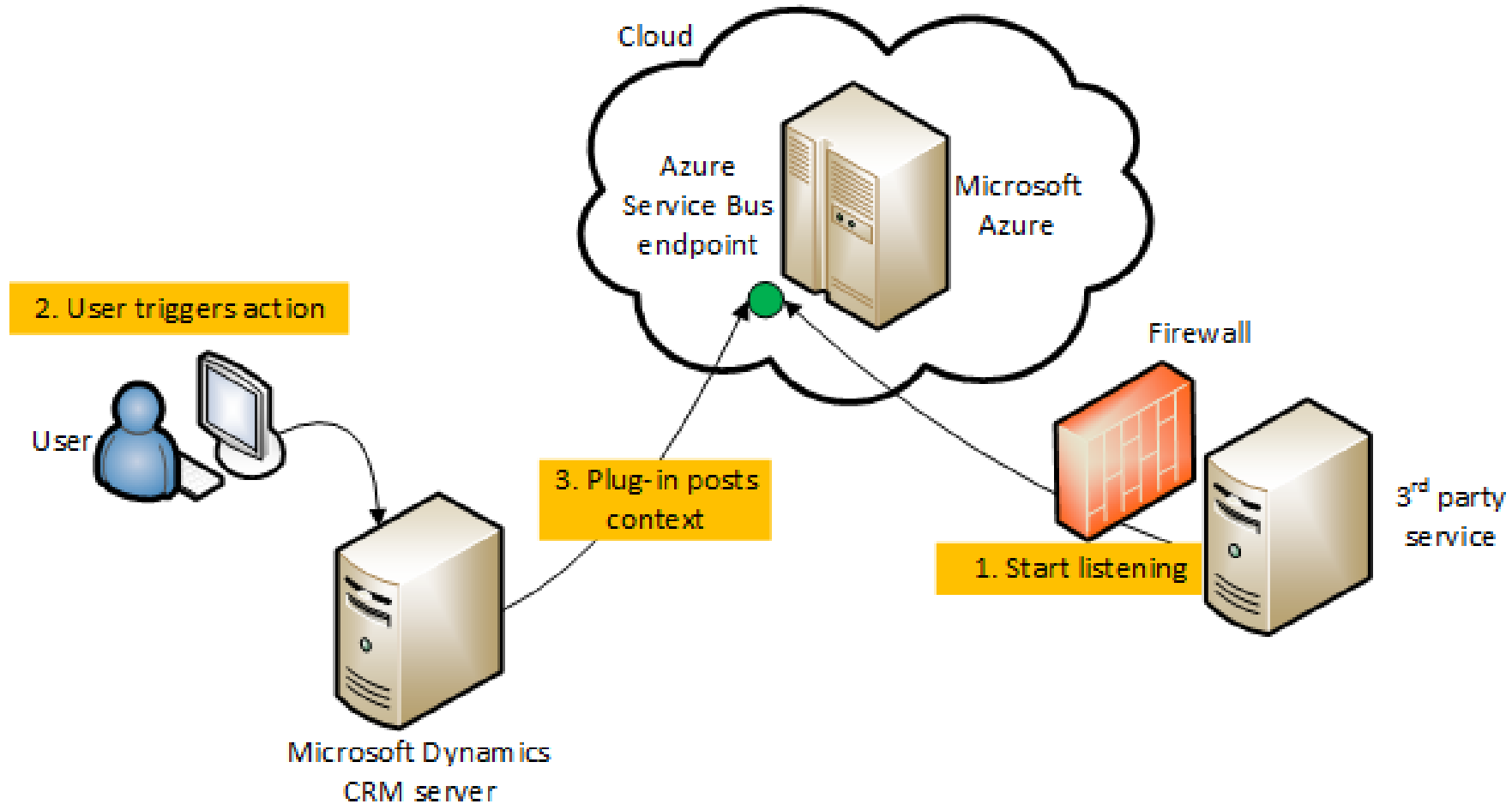


Why we need Azure?

- Inconsistent workload demands
- Consolidate business logic
- Scheduled jobs are not easily managed within D365
- SQL stored procedures are not an option
- Limitations of FetchXML, Rollup fields
- Offload processing
 - Plugins, workflows, and API in D365 have a timeout limit of 2 minutes
 - Need to create or update a large number of records
 - Waiting for external services to respond
 - SQL timeout



ServiceBUS with D365

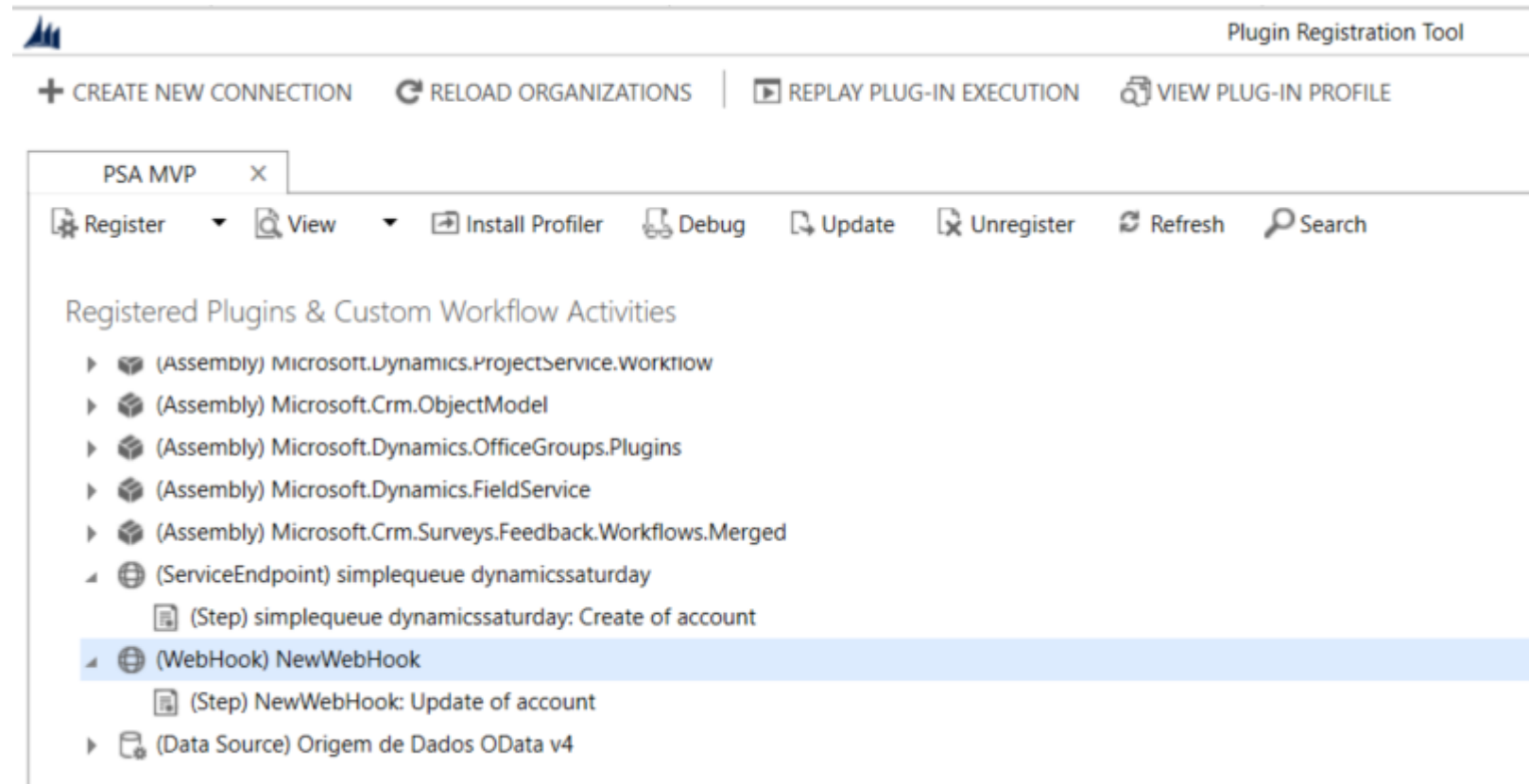


Connect CRM – Service BUS – HARD!

Plugin Registration Tool

Endpoint

Step



Service BUS vs. WebHooks

Service bus is always up – Web hooks only work when the service is working

SB has low latency

SB can ingest 1000's of messages per second

1000 concurrent connections

Publish/subscribe supports a decoupled architecture



Dynamics 365 and Azure

Demonstration

Integration of WebJobs and Service Bus Queues with Dynamics 365

Closing

Thanks for allowing me to boring you all



My name is Tiago Costa



Slides and Demos at:

<https://github.com/tiagocostapt/Presentations>

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