

# Casos de Uso de Power BI y Analysis Services



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Argentina Edition  
Junio 23 2020





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# Javier Villegas

## DBA Manager at Mediterranean Shipping Company

Involved with the Microsoft SQL Server since early version to 2019 (Azure SQL DB & MI)

Specialization in SQL Server Administration, Performance Tuning , High Availability and Disaster Recovery

Responsible of Data Platform

## Microsoft MVP Data Platform

MCP and MCTS

Blogger and Forums contributor

## Technical Speaker

SQL PASS, 24 HOP, PASS Marathon, SQL Saturdays and PASS Virtual Groups NetConf (vOpen),

GroupBy , DataPlatformGeeks and Global AI Tour.

@sqlargentina



# Our Journey to Power BI

## Starting Point

- Distributed Agencies around the world
- Each Agency has its own Active Directory
- Each Agency has its own SQL/SSAS/SSRS , etc.
- Headquarters

# Our Journey to Power BI

- Analysis Services Multidimensional
- ETL (SSIS) and SQL Warehouse
- Excel / PowerPivot / PowerQuery
- SQL Server Reporting Services



Transactional

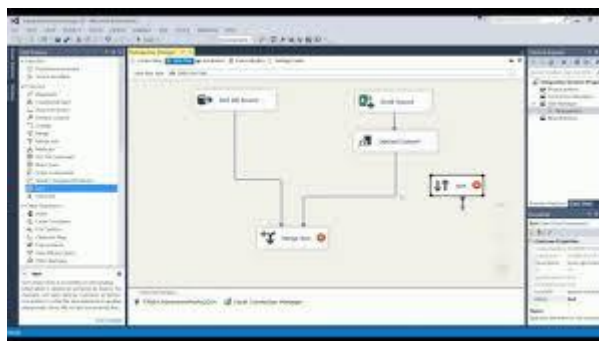


Data Warehouse



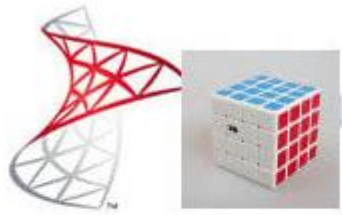
**Multidimensional**

Analysis Services



SSIS

On-Premises



**Multidimensional**

Analysis Services



PowerPivot



Reporting Services

On-Premises

# Our Journey to Power BI

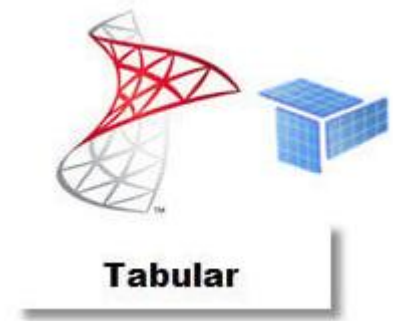
- Analysis Services Tabular
- Data Feeds
- Excel / PowerPivot / PowerQuery
- SQL Server Reporting Services



Transactional



Data Feeds



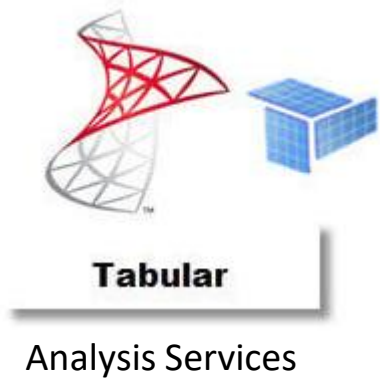
Analysis Services

On-Premises



# Our Journey to Power BI

- Cube Processing based on SQL Server Agent Jobs
  - Windows Authentication to connect to SSAS
- Data Feeds
  - SQL Server Table Value Functions (FNTB) to retrieve business data (denormalized)



Reporting Services

On-Premises

# Our Journey to Power BI

- Migration to Office 365
  - Now every user has a @company.com account
- Power BI – Previews
  - TAP Customers – **Early Adopters**
- Azure
  - Single tenant in USA

# Our Journey to Power BI

- First Labs – Power BI connected to Analysis Services (On-Premises)
- Initial previews of On-Premise Data Gateway (Personal)



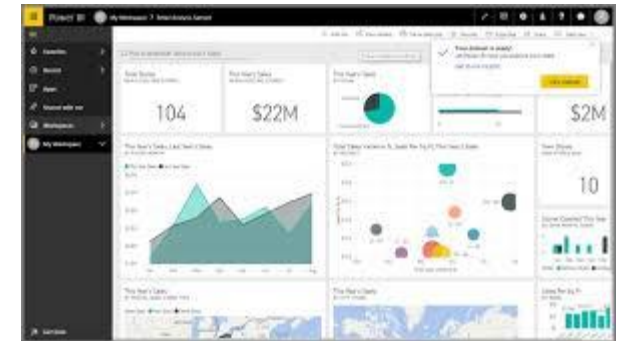
Excel



On-Premise Data Gateway  
(Personal)



On-Premises





Tab

# HOUSTON

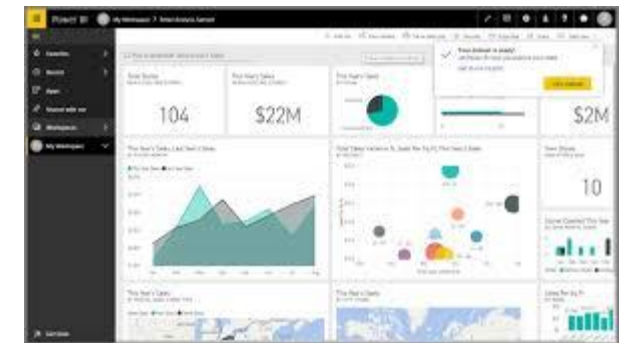
## WE HAVE A

# PROBLEM!

Authentication  
Identity  
Role Level Security



Power BI



On-Premises



# Our Journey to Power BI

## Problem

- Authentication !!!!!!!!!!!.
  - In Azure we have [user1@company.com](#)
  - In local AD we have USA\user1, CHILE\user1, SPAIN\user1, etc.



 **GUY**<sup>in</sup><sub>a</sub> **CUBE**



# Our Journey to Power BI

## First Solution

- User Mapping in OPDG – at datasource level
  - In Azure we have [user1@company.com](mailto:user1@company.com)
  - In local AD we have USA\user1, CHILE\user1, SPAIN\user1, etc.

User Mapping !!!!



Search



New look on



Notifications



Settings



Download



Help & Support



Feedback



Manage personal storage

Create content pack

View content pack

Admin portal

Manage gateways

Settings

Manage embed codes

to benefit from



Home

Favorites &gt;

Recent &gt;

Apps

Shared with me

Deployment pipelines

Learn

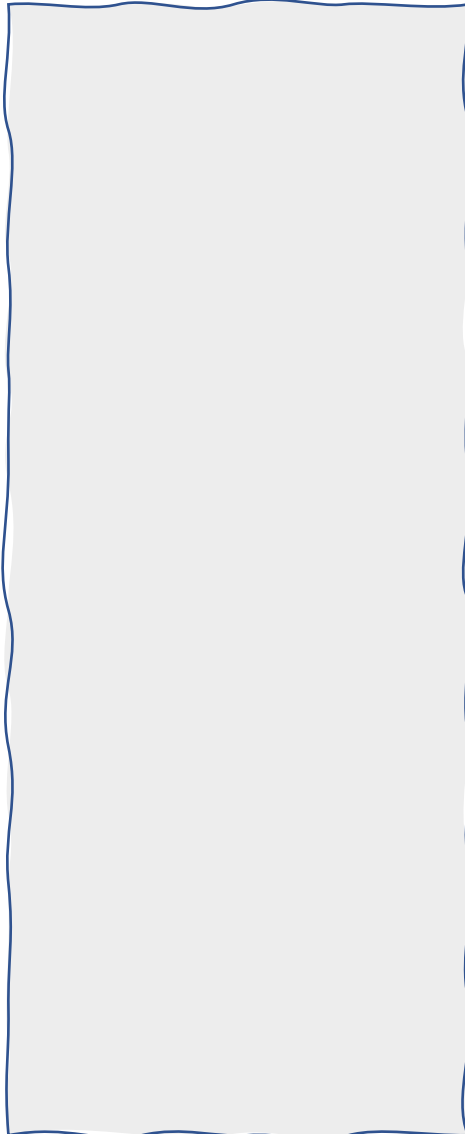
Workspaces &gt;

My workspace v

Get data

## ADD DATA SOURCE

## GATEWAY CLUSTERS



## Data Source Settings Users

Data Source Name

My SSAS Data Source



Data Source Type

Analysis Services v

Server

ONPREMSSAS

Database

CUBE1

The credentials are encrypted using the key stored on-premises on the gateway server. [Learn more](#)

Username

USA\localacc



Password

.....



&gt;Advanced settings

Add

Discard

## Data Source Settings

### Users

People who can publish reports that use this data source

Add

☐ Peter Parker

Remove

Map user names

# Map user names

Create rules to map user names to Analysis Services server user names or associate custom data with user names. [Learn more](#)

Select the type of rule for this data source

- ☒ Effective user names
- ☐ CustomData

	Replace	With
1	peter.parker@company.com	USA\pparker

Add Delete

Enter user name to see how the mapping rule will change it.

Original name

Original name

Test rule

After rule applied

Result of applying mapping rule will appear here

OK

Cancel

Our Jo

First Solut

- User Ma
- In Azu
- In loca

**HOUSTON**  
**WE HAVE A**  
**PROBLEM!**

But... Wait a minute....

- We have 20+ Gateways
- Each Gateway has 30+ Datasource
- We have 10K + users ....

, etc.

User Mapping !!!!

# Our Journey to Power BI

## Second Solution

- User Mapping at Active Directory Level – AD Lookup
  - Identify 2 unused attributes in AD User Account
    - ExAttr1 & ExAttr2
  - Using PowerShell, For every local AD User Account , update EA1 &EA2
    - EA1 = [Peter.Parker@company.com](mailto:Peter.Parker@company.com)
    - EA2 = USA\PParker
  - Configure OPDG to go to AD and read the custom Attributes and do the Mapping

# Our Journey to Power BI

Edit **Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config** file on each of your On-premises Gateway machines. This is located in the main installation directory, which by default is **C:\Program Files\On-premises data gateway\**

In the config file, there are two lines that will need to be edited. The line that contains the setting for “**ADUserNameReplacementProperty**” and the line that contains the setting for “**ADUserNameLookupProperty**”



# Our Journey to Power BI

- High Availability for On Premise Data Gateway
  - Solution
    - Clusters



# HOUSTON — WE HAVE A — **PROBLEM!**

Our Tenant was located in USA

Need to be moved to EU

No migration tool !!!!!

# Our Journey to Power BI

- Azure Analysis Services
  - Benefits
    - Managed Service
    - No need for User Mapping / AD Lookup
    - Authentication / Identity is all @company.com



Transactional



On-Premises



On-Premise Data Gateway  
Cluster



Azure Analysis Services



Our Jo

- Azure Ar
- Proble
- Ho

**HOUSTON**  
**WE HAVE A**  
**PROBLEM!**

Can not use local AD account to connect to Azure AS

# SQL Job Step using XMLA to Refresh – Windows Authentication

The screenshot shows the 'Job Step Properties - Refresh' dialog box in SQL Server Enterprise Manager. The 'General' tab is selected. The 'Step name' is 'Refresh - Cube'. The 'Type' is 'SQL Server Analysis Services Query'. The 'Run as' is 'SQL Server Agent Service Account'. The 'Server' is 'MYLOCALAS' and the 'Database' is 'MYDATABASE'. The 'Command' field contains an XMLA refresh command. The 'Connection' section shows the server and connection names. The 'Progress' section shows a 'Ready' status. The 'OK' button is highlighted.

**Job Step Properties - Refresh**

**Select a page**

- General
- Advanced

**Script** ? Help

Step name: Refresh - Cube

Type: SQL Server Analysis Services Query

Run as: SQL Server Agent Service Account

Server: MYLOCALAS

Database: MYDATABASE

Command:

```
{
  "refresh": {
    "type": "full",
    "objects": [
      {
        "database": "MYDATABASE"
      }
    ]
  }
}
```

Open... Select All Copy Paste

**Connection**

Server: [Redacted]

Connection: [Redacted]

[View connection properties](#)

**Progress**

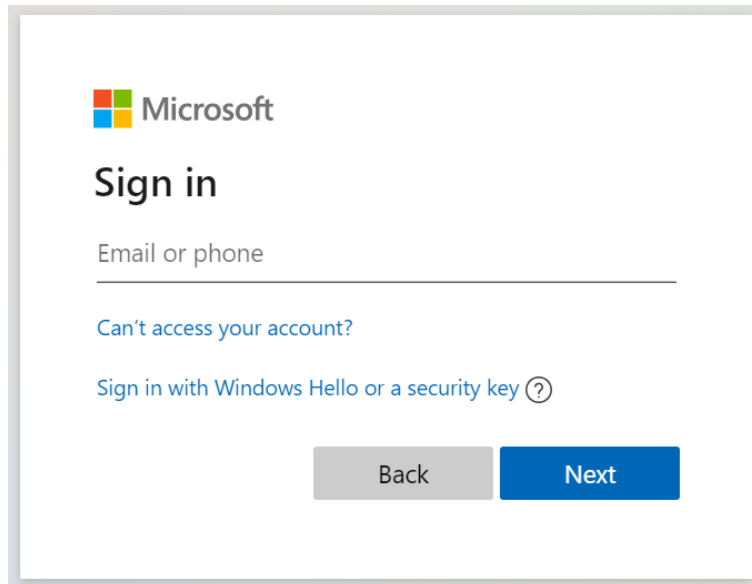
Ready

Previous Next

OK Cancel

On-Premises


# Not possible to connect from On-Prem SQL Server to Azure AS to start processing



The image shows a Microsoft sign-in interface. At the top left is the Microsoft logo. Below it is the text "Sign in". Underneath is a text input field labeled "Email or phone". Below the input field are two links: "Can't access your account?" and "Sign in with Windows Hello or a security key ?". At the bottom are two buttons: "Back" and "Next".

Peter Parker

## Approve sign in request

 We've sent a notification to your mobile device.  
Please open the Microsoft Authenticator app to respond.

Having trouble? [Sign in another way](#)

[More information](#)



Solution was to use a SSIS package (using C# script) to call the Azure AS Refresh

Job Step Properties - Refresh Cube (SSIS)

Select a page

- General
- Advanced

Script Help

Step name: Refresh Cube (SSIS)

Type: SQL Server Integration Services Package

Run as: SQL Server Agent Service Account

Set values Verification Command line

Package Configurations Command files Data sources Execution options Logging

Package source: File system

Server:

Log on to the server

- ☒ Use Windows Authentication
- ☐ Use SQL Server Authentication

User name:

Password:

Package: C:\SSIS\VAZASRefresh\dtssx

Connection

Server:

Connection:

[View connection properties](#)

Progress

Ready

Next Previous

OK Cancel

Job Step Properties - Refresh Cube (SSIS)

Select a page

- General
- Advanced

Script Help

Step name: Refresh Cube (SSIS)

Type: SQL Server Integration Services Package

Run as: SQL Server Agent Service Account

Package Configurations Command files Data sources Execution options Logging

Set values Verification Command line

Properties:

Property Path	Value
\Package.Variables[User::ASServer].Properties...	azure://westeurope.azure.windows.net
\Package.Variables[User::DatabaseName].Properties...	MyCube
\Package.Variables[User::Tables].Properties...	Table1,Table2,Table4

Remove

Connection

Server:

Connection:

[View connection properties](#)

Progress

Ready

Next Previous

OK Cancel



# New Solution using PowerShell to call the Azure AS Refresh

Job Step Properties - PS

Select a page

- General
- Advanced

Script ? Help

Step name:  
PS

Type:  
Operating system (CmdExec)

Run as:  
SQL Server Agent Service Account

Process exit code of a successful command: 0

Command:

Open...  
Select All  
Copy  
Paste

powershell.exe "C:\PS\AzAS.ps1" -Server 'asazure://westeurope.asazure.windows.net/xxxxx' -Database 'MyCube' - Tables 'Table1,Table2,Table4'

Tip: Enclose command names that contain spaces in quotation marks. For example: "command name" <arguments>.

Connection

Server:  
Connection:

[View connection properties](#)

Progress

Ready

Previous Next

OK Cancel

# Azure Analysis Services

[Home](#) >



Analysis Services

Metrics

[Documentation](#) ✕

Search (Ctrl+/)

« [+ New chart](#) [Refresh](#) [Share](#) [Feedback](#) ▾

Local Time: 6/16 10:16 PM - 6/17 12:38 PM (Aut...)

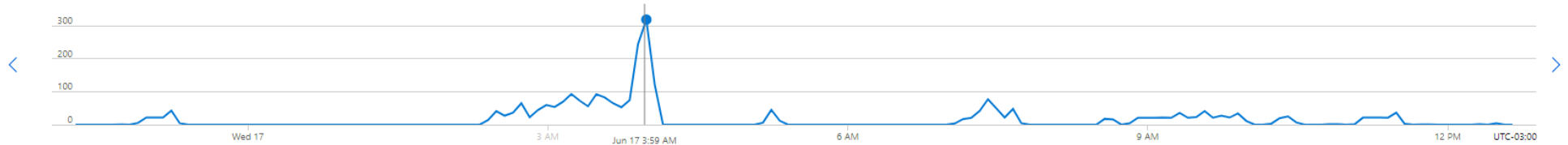
- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Scale
  - Pricing Tier (Scale QPUs)
  - Replicas
- Models
  - Manage
- Settings
  - Quick Start
  - Analysis Services Admins
  - On-Premises Data Gateway
  - Backups
  - Connection Strings
  - Firewall
  - Properties
  - Locks
  - Export template
- Monitoring
  - Alerts
  - Metrics

Avg QPU for [redacted]

[Add metric](#) [Add filter](#) [Apply splitting](#)

[Line chart](#) ▾ [Drill into Logs](#) ▾ [New alert rule](#) [Pin to dashboard](#) ▾ ...

Scope: [redacted] Metric Namespace: Analysis Service standar... Metric: QPU Aggregation: Avg



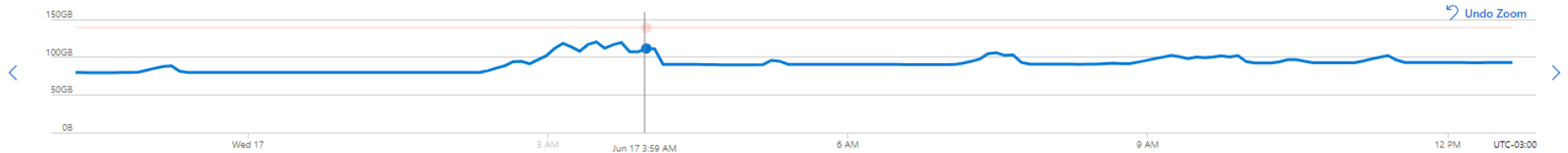
QPU (Avg)  
319.58

Avg Memory and Avg Memory: Memory Limit Low for [redacted]

[Add metric](#) [Add filter](#) [Apply splitting](#)

[Line chart](#) ▾ [Drill into Logs](#) ▾ [New alert rule](#) [Pin to dashboard](#) ▾ ...

























[redacted] Memory, Avg [redacted] Memory: Memory Limit ... Avg



Memory (Avg)  
111.7 GB

Memory: Memory Limit...  
139.6 GB

# Azure Analysis Services

S0 Standard ★	S1 Standard ★	S2 Standard ★	S4 Standard ★	S8 Standard	S9 Standard	S8V2 Standard ★	S9V2 Standard ★
40 Query Processing U...	100 Query Processing U...	200 Query Processing U...	400 Query Processing U...	320 Query Processing U...	640 Query Processing U...	640 Query Processing U...	1,280 Query Processing U...
 Up to 10 GB Cache	 Up to 25 GB Cache	 Up to 50 GB Cache	 Up to 100 GB Cache	 Up to 200 GB Cache	 Up to 400 GB Cache	 Up to 200 GB Cache	 Up to 400 GB Cache
 Dedicated service	 Dedicated service	 Dedicated service	 Dedicated service	 Dedicated service	 Dedicated service	 Dedicated service	 Dedicated service
 SSL	 SSL	 SSL	 SSL	 SSL	 SSL	 SSL	 SSL

# Questions ?



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<http://sql-javier-villegas.blogspot.com.ar>

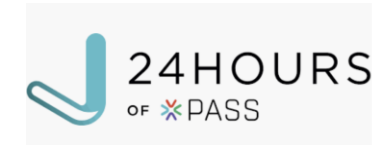


[javier.ignacio.villegas@gmail.com](mailto:javier.ignacio.villegas@gmail.com)

## Casos de Uso de Power BI y Analysis Services

Thank you!!

Gracias !!



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