

Welcome to Azure SQL 101

- **Azure SQL** – a traditional SQL database in the cloud, offered as a fully managed service. In this session, we will overview Azure service management models, and jump-start our Azure SQL exposure with familiar tools (SSMS & PowerShell) and learn about automation options, service tiers and a little about pricing.



Hello everyone!

Elkhan Yusubov (MCT, MCSA, MCSD)

FEI Systems – a local healthcare innovation company

Let's START!



@ElYusubov



ElkhanYusubov



GitHub ElYusubov

What we will cover

What is Azure?

Azure SQL vs MS SQL Server

Azure SQL overview

Demo automation tools

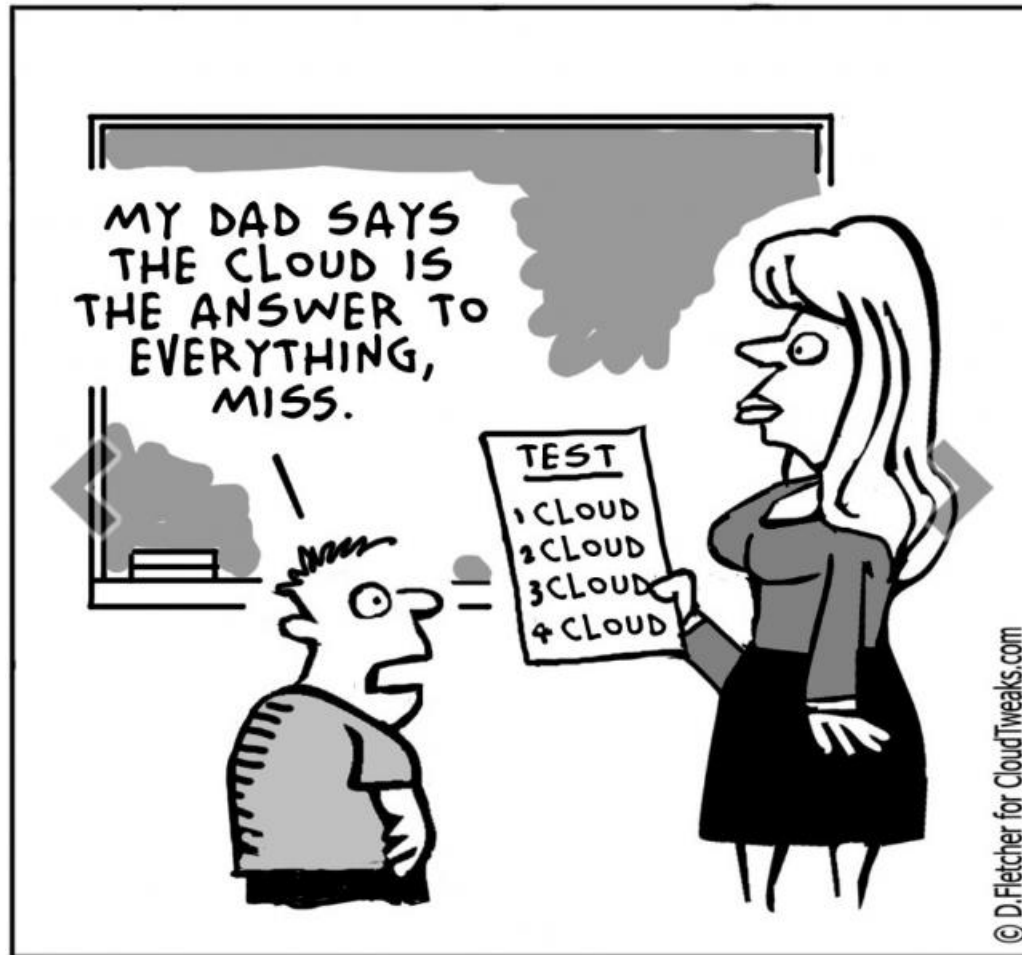
Demo development tools

Azure Government

What is Azure?

- What is cloud computing?
- What is Azure offering?
- Azure environment walkthrough
- Subscription management, usage and billing
- Setting a free trial account

What is cloud ?



Azure management models

- Azure Service Management (classic):
 - Azure classic portal and Azure portal
 - Provides limited RBAC support
- Azure Resource Manager:
 - Is based on the concept of Resource Groups
 - Supports tagging
 - Supports template-based deployments
 - Provides full RBAC support
 - Is not available via Azure classic portal

ASM vs ARM

	ASM	ARM
	Azure Service Management	Azure Resource Manager
Portal	https://manage.windowsazure.com	https://portal.azure.com
Codename	Red Dog	Ibiza
API	XML driven REST API (ASM old API)	JSON driven REST API (ARM API)
VMs	VMs reside under Cloud Service	All resources in ARM reside within a Resource Group
Deployment	Deployment can be done using PowerShell	Deployment can be done using JSON templates using its own PowerShell module
PowerShell cmdlets	New -AzureResourceName Verb-AzureNoun (Get, Set)	New -AzureRmResourceName Verb-AzureRmNoun (Get, Set)
DNS Name	cloud-service-name.cloudapp.net	<dns-name>.<region>.cloudapp.azure.com
	Resource Tagging isn't available	Resources can be Tagged for better grouping and management
	Deletion of resources isn't easy	Deletion of resources is easy as resources reside under a Resource Group
	Fine grained access control to resources isn't possible	Fine grained access control to resources is possible using Role Based Access Control (RBAC)
	Resource locking isn't available	Resources can be locked to prevent accidental deletion


Demo: Azure environment walkthrough

- Azure portal
 - <https://portal.azure.com>
- Azure classic portal
 - <https://manage.windowsazure.com>
- Azure Cloud Terminology
 - Blades, customization, search, resource groups, etc.


Setting a free trial account

- Start free with \$200 in credit
- Try out any combination of Azure services for 30 days
- Credit card information used for identity verification
- You'll **never** be charged unless you choose to subscribe


Create your free Azure account today



Get \$200 free credit
Start free with \$200 in credit, and keep going with free options.

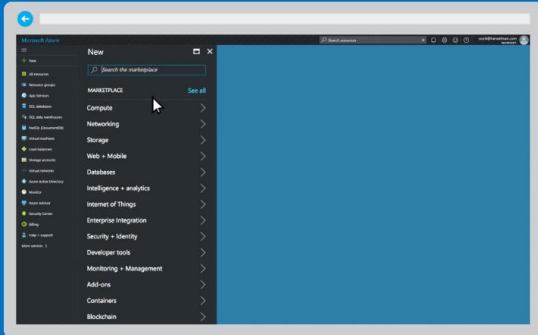


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Subscription management, support & billing

- Accounts, subscriptions and RBAC
- Azure billing and support options
- Azure pricing & calculator
- Demo

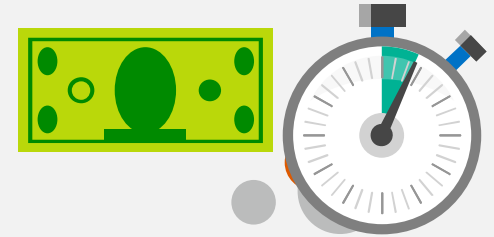
Accounts, subscriptions and RBAC

- Azure account:
 - Determines usage reporting and billing methods
- Subscription:
 - Is the administrative and billing boundary within an account
- Management roles:
 - Account administrator (owner by default)
 - RBAC: granular permissions on the subscription, resource group, and resource level

Azure billing and support options

The most common Azure billing options include:

Pay-As-You-Go



Buy from a Microsoft Reseller



Enterprise agreements



Demo

- View subscription quota in Azure portal
- View charges by resource group
- View the billing data in classic Azure account center
- Tips to save credits while exploring Azure

Azure Price Calculator

Microsoft Azure

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[FREE ACCOUNT](#)

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Virtual Machines

Provision Windows and Linux virtual machines in seconds



Storage

Durable, highly-available, and massively-scalable cloud storage



SQL Database

Managed relational SQL Database as a service



App Service

Quickly create powerful cloud apps for web and mobile



Azure Cosmos DB

Globally distributed, multi-model database for any scale

Azure SQL vs MS SQL Server

- RDBMS deployment options
- Comparing SQL Databases (PaaS vs IaaS)

Relational database deployment options

- PaaS

- Azure SQL Database
- MySQL Database

- IaaS

- SQL Server in an Azure IaaS virtual machine
- MySQL in an Azure IaaS virtual machine
- Other RDBMS that Azure IaaS VMs support:
 - Oracle
 - Sybase
 - DB2
 - SAP HANA

Compare SQL databases

Azure SQL database	SQL Server in an Azure VM
PaaS	IaaS
Minimized management overhead	Higher management overhead (support for automated patching and backups)
Minimized cost	Cost includes VM charges
Fast provisioning	Provisioning requires a VM deployment
Partial feature parity on-premises SQL Server	Feature parity with on-premises SQL Server
No virtual network support	Virtual network support
Managed high availability and scalability	Support for high availability and scalability

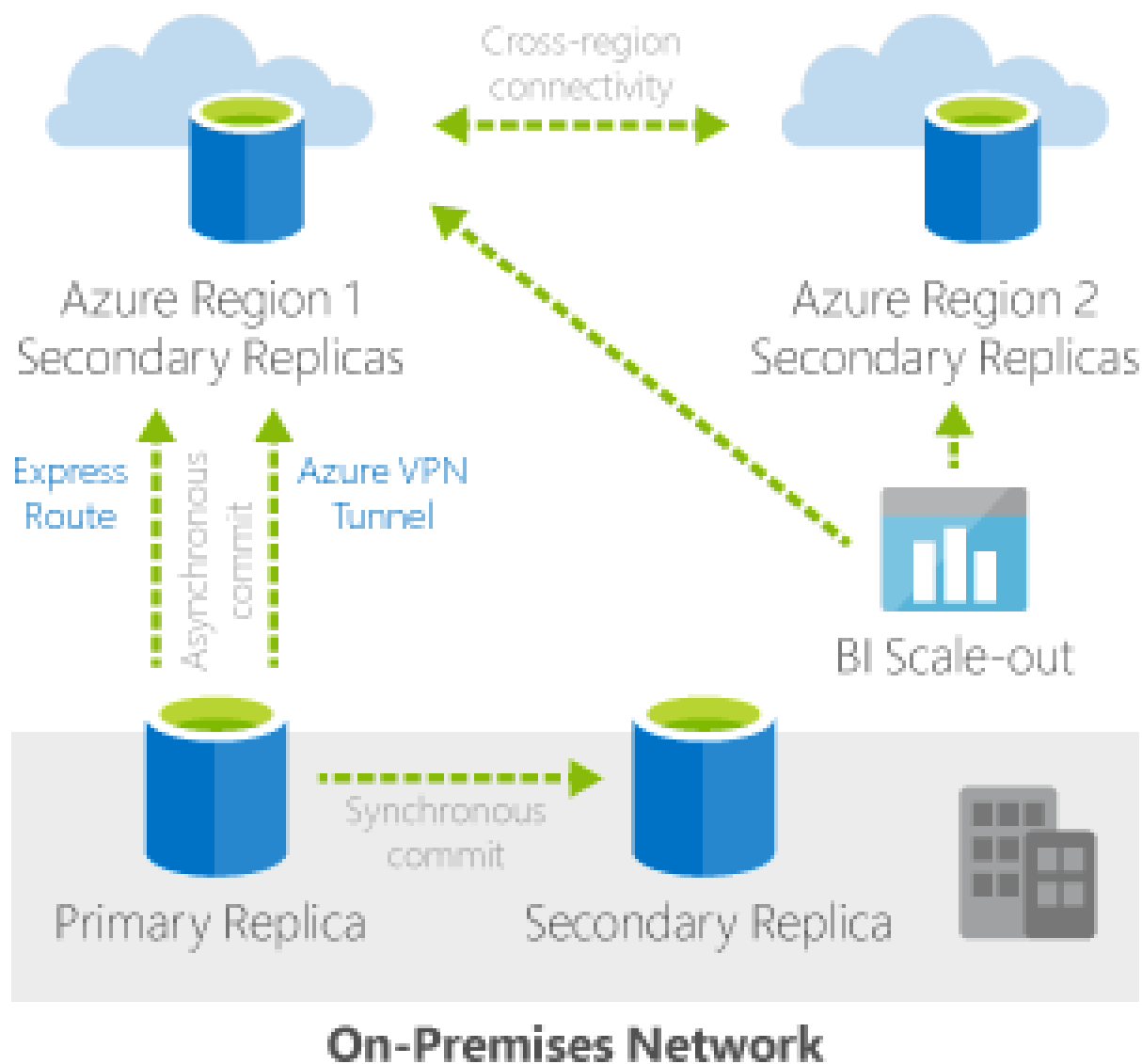
Azure SQL overview

- Resiliency and scalability
- Improve business continuity
- Creating Azure SQL databases
- Demo: portal with PowerShell

SQL database resiliency and scalability

- Resiliency:
 - Three synchronously replicated copies in the local Azure data center
 - Asynchronously replicated copies in up to four remote Azure data centers
 - Support for Point In Time Restore that leverages automatic transaction log backup every five minutes
- Scalability:
 - Vertical scaling up to 1TB and 1750 DTUs by changing performance level
 - Horizontal scaling through federations and sharding
 - Grouping databases into Elastic Database pools

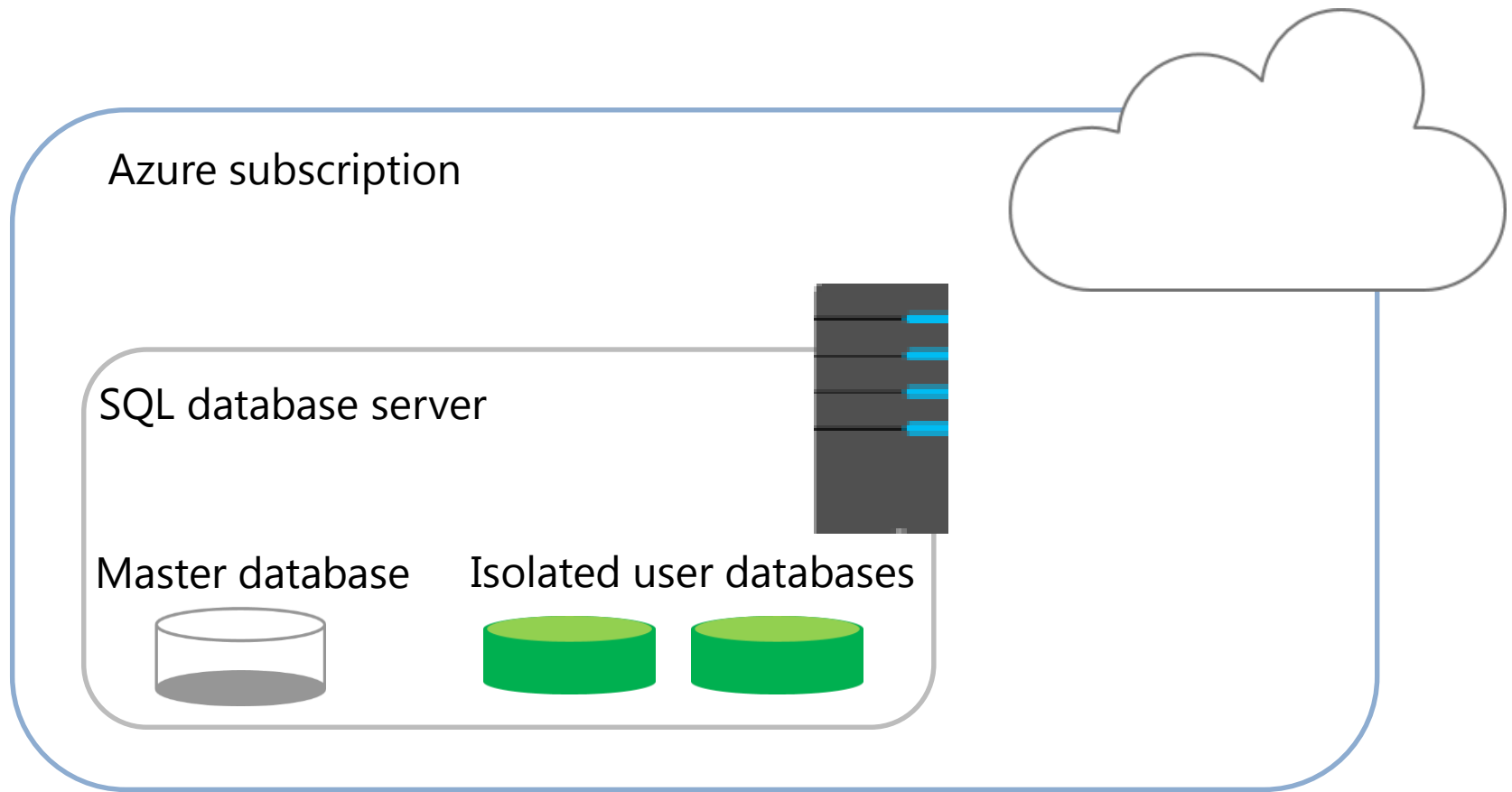
Improve business continuity



Creating Azure SQL databases



- Azure SQL databases concept
- Demo: Create new SQL database
- Demo: overview of features and metrics

Azure SQL databases





- PaaS relational data store
- Built on SQL Server technologies

Create new SQL database through portal

SQL Server (logical server o...  


The value should not be empty.


* Server name 
 
...database.windows.net


* Server admin login


* Password



* Confirm password

* Subscription
 



* Resource group 
☒ Create new ☐ Use existing


* Location
 


☒ Allow azure services to access server 



SQL database  



* Database name

* Select source 
 

Server
demo-server-1113157555 (eastus) 

Want to use SQL elastic pool? 
☐ Yes ☒ Not now

* Pricing tier 
Standard S3: 100 DTU, 250 GB 

* Collation 
 

Create new SQL database with script

```
# Create a resource group
New-AzureRmResourceGroup -Name $resourcegroupname -Location $location

# Create a logical server
New-AzureRmSqlServer -ResourceGroupName $resourcegroupname `
  -ServerName $servername `
  -Location $location `
  -SqlAdministratorCredentials $(New-Object -TypeName System.Management.Automation.PSCredential -ArgumentList $adminlogin, $

# Configure a server firewall rule
New-AzureRmSqlServerFirewallRule -ResourceGroupName $resourcegroupname `
  -ServerName $servername `
  -FirewallRuleName "AllowSome" -StartIpAddress $startip -EndIpAddress $endip

# Create a database in the server with sample data
New-AzureRmSqlDatabase -ResourceGroupName $resourcegroupname `
  -ServerName $servername `
  -DatabaseName $databasename `
  -SampleName "AdventureWorksLT" `
  -RequestedServiceObjectiveName "S0"
```


Azure SQL feature overview

- Logical server settings
- SQL database settings
- Demo: walkthrough of blade properties

Azure automation tool - PowerShell

- PowerShell with Azure PowerShell modules
 - Scripts manage Azure resources from Win OS
 - Elastic database pool creation and management
 - Demo – elastic database feature to simplify data tier development and management, especially for SaaS applications

Azure PowerShell module

Azure Resource Management:

Authenticate

Add-AzureRmAccount

Select the target Azure subscription (if more than one exists):

Get-AzureRmSubscription

Select-AzureRmSubscription

Apps »

Windows PowerShell

Windows PowerShell ISE

Microsoft Power BI

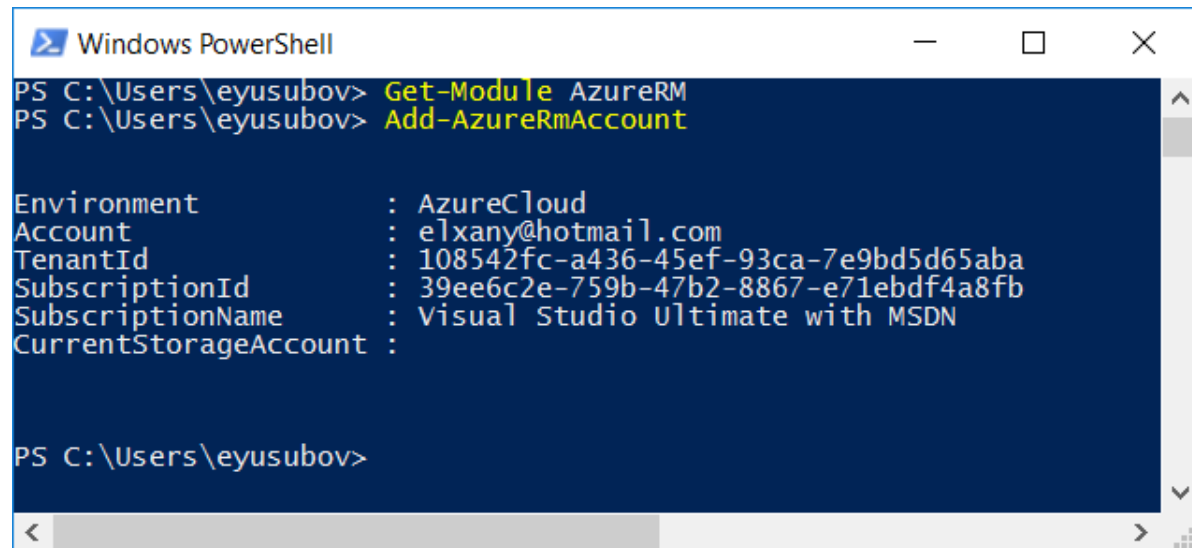
Search suggestions »

power - See web results

Documents (4+) »

Folders (2+) »

power|



```
Windows PowerShell
PS C:\Users\eyusubov> Get-Module AzureRM
PS C:\Users\eyusubov> Add-AzureRmAccount

Environment      : AzureCloud
Account          : elxany@hotmail.com
TenantId         : 108542fc-a436-45ef-93ca-7e9bd5d65aba
SubscriptionId   : 39ee6c2e-759b-47b2-8867-e71ebdf4a8fb
SubscriptionName : Visual Studio Ultimate with MSDN
CurrentStorageAccount :
```

Demo: Development tools

- Demo: connecting via SSMS
- Demo: running SQL scripts on SSMS
- Demo: running scripts within portal editor
- Demo: configure geo-replication
- T-SQL syntax not supported in SQL Database

T-SQL syntax not supported in SQL Database

- **DDL statements with extensions related to disk placement have unsupported features**
 - CREATE and ALTER TABLE statements have FileTable options (because FILESTREAM is not supported)
 - CREATE and ALTER login statements are supported but have limited options
 - CREATE and ALTER statements including file placement, FILESTREAM, and service broker options only apply to SQL Server
- **Transact-SQL syntax not supported in SQL Database**
 - Collation of system objects
 - USE statement
 - Transact-SQL debugging
 - sp_configure options and RECONFIGURE
 - Global temporary tables
 - Functions: fn_get_sql, fn_virtualfilestats, fn_virtualservernodes
 - Other unsupported syntax link is available on docs.microsoft.com

Azure Government

- What is Azure Government?
 - Run cloud data workloads in secure Azure Cloud
 - Highly compliant Level 5 data centers
 - Dedicated and physically separate regions
 - Free trial for vetted organizations

The image is a screenshot of the Microsoft Azure Government trial request page. At the top, there is a navigation bar with links: "Why Azure", "Solutions", "Products", "Documentation", "Pricing", "Training", "Marketplace", and "Partners". Below the navigation bar, the text "Microsoft Azure Government trial" is prominently displayed. Underneath this, there is a row of links: "Explore Azure Government", "How to Buy", "Documentation", "Blog", and "Support". The main content area has the heading "Request your trial subscription today". Below this heading, there is a paragraph of text: "Please complete this form, and we will begin verifying your eligibility as a US federal, state, local, or tribal entity, or their partner and begin the trial enrollment process. We will contact you by email within two business days regarding next steps." At the bottom of this section, it says "The Azure Government 90-day trial includes \$500 per month to spend". To the right of the text, there is a form titled "Tell us about you" with input fields for "First name" and "Organizational e-mail address".

Summary

What is Azure?

Azure SQL vs MS SQL Server

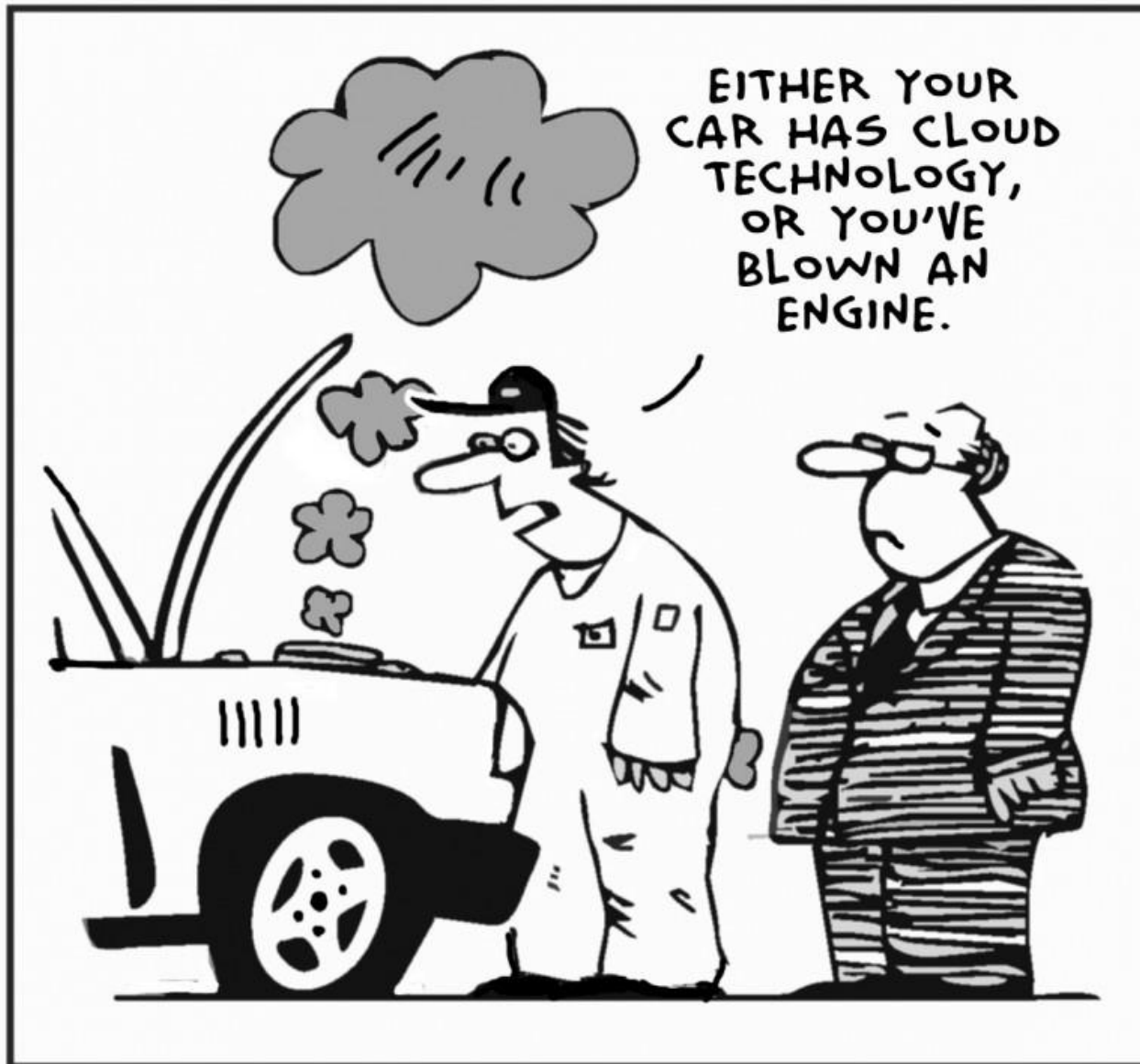
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What is Azure SQL?



Thank you for coming!

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Thank you!



@ElYusubov



ElkhanYusubov



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