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!

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Let's START!

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What we will cover

What is Azure?

Azure SQL vs MS SQL Server

Azure SQL overview

Demo automation tools

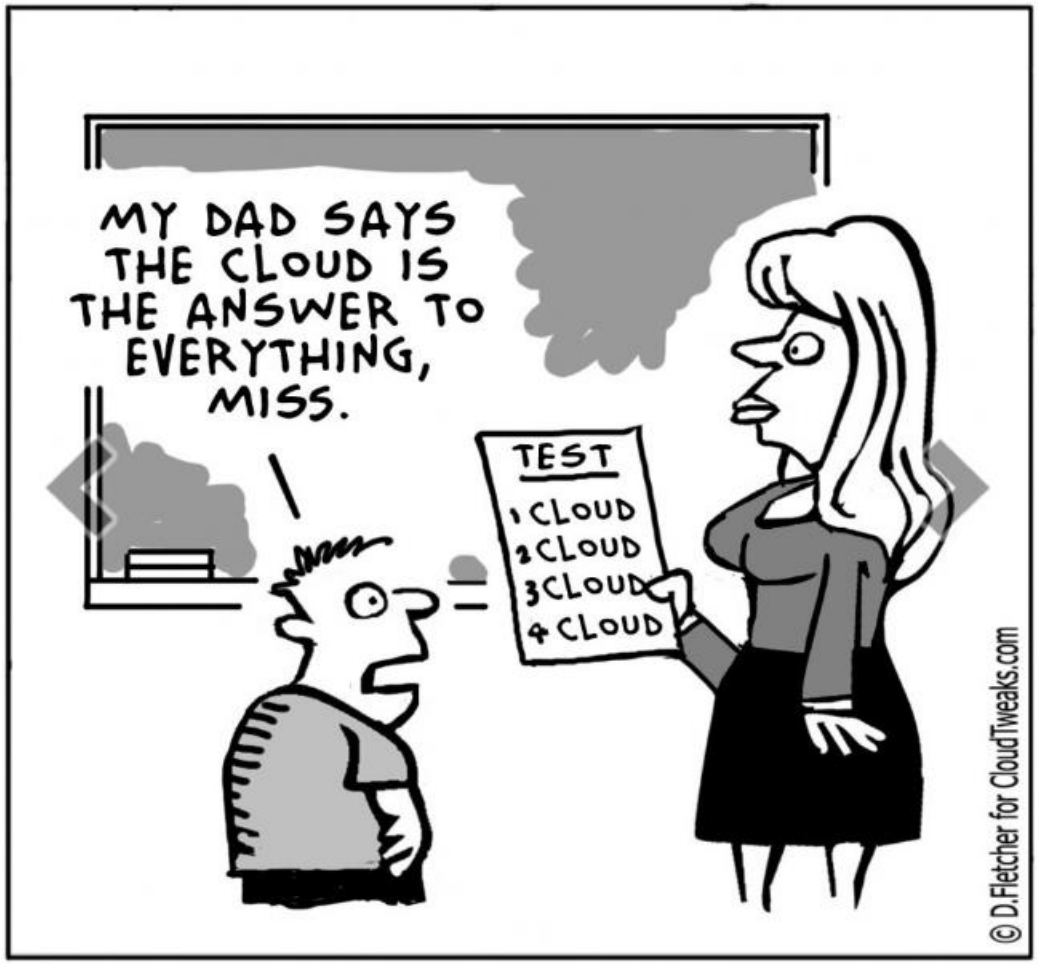
Demo development tools

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

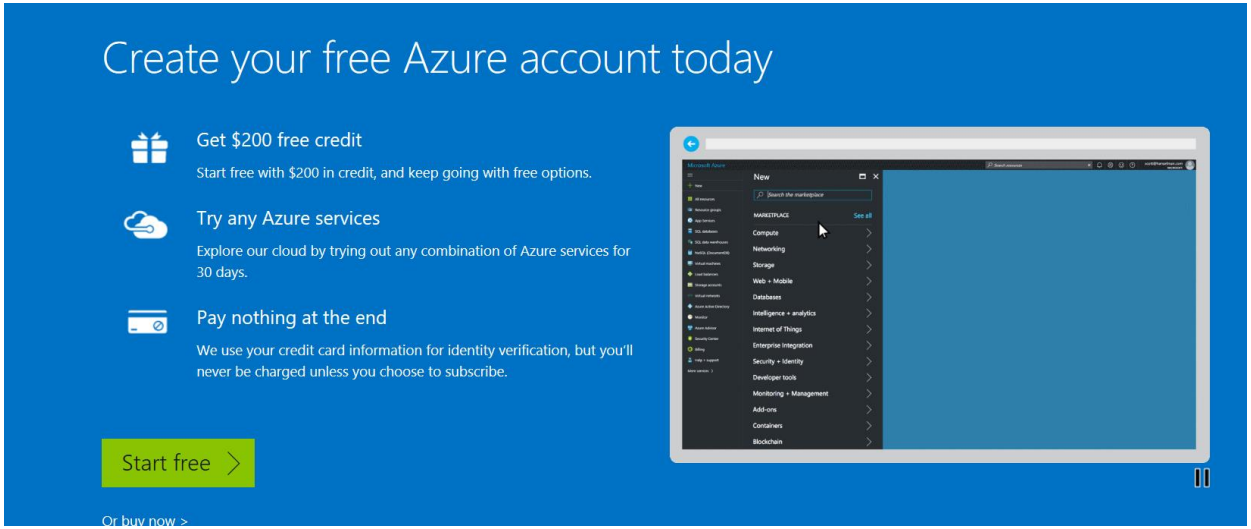
	ASM	ARM
	Azure Service Management	Azure Resource Manager
Portal	https://manage.windowsazure.com	https://portal.azure.com
Codename	Red Dog	Ibiza
API	XML driven REST API (ASM old API)	JSON driven REST API (ARM API)
VMs	VMs reside under Cloud Service	All resources in ARM reside within a Resource Group
Deployment	Deployment can be done using PowerShell	Deployment can be done using JSON templates using its own PowerShell module
PowerShell cmdlets	**New**-Azure*ResourceName* Verb-AzureNoun (Get, Set)	**New**-Azure**Rm***ResourceName* 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



Subscription management, support & billing

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

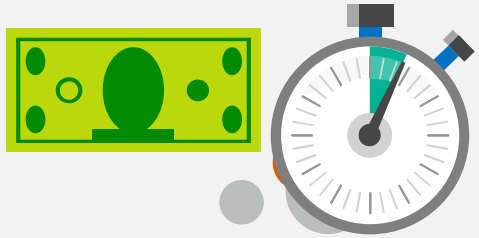
Accounts, subscriptions and RBAC

- 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

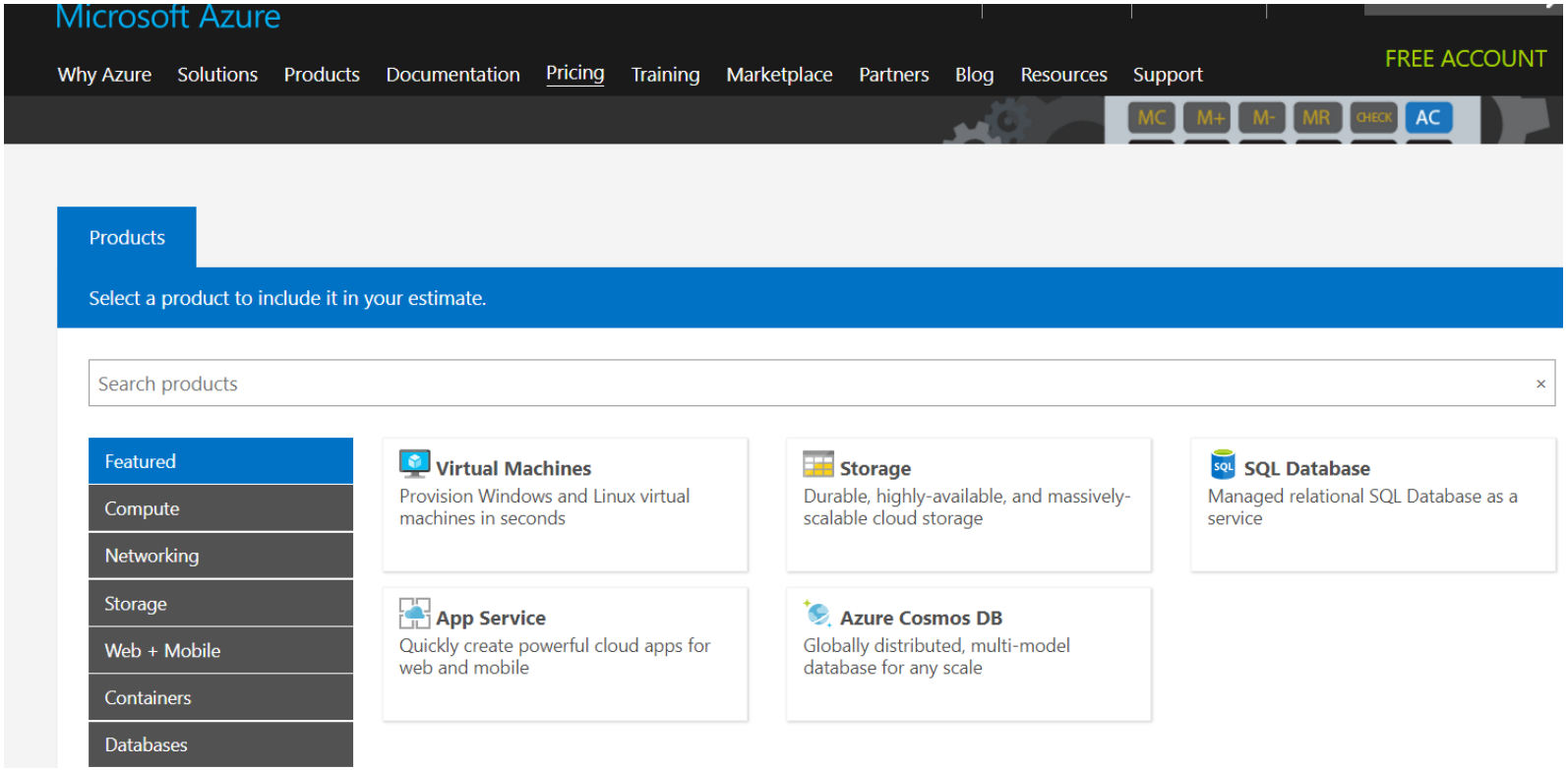
Enterprise agreements

Resource cost, billing data, subscription quotas

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



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

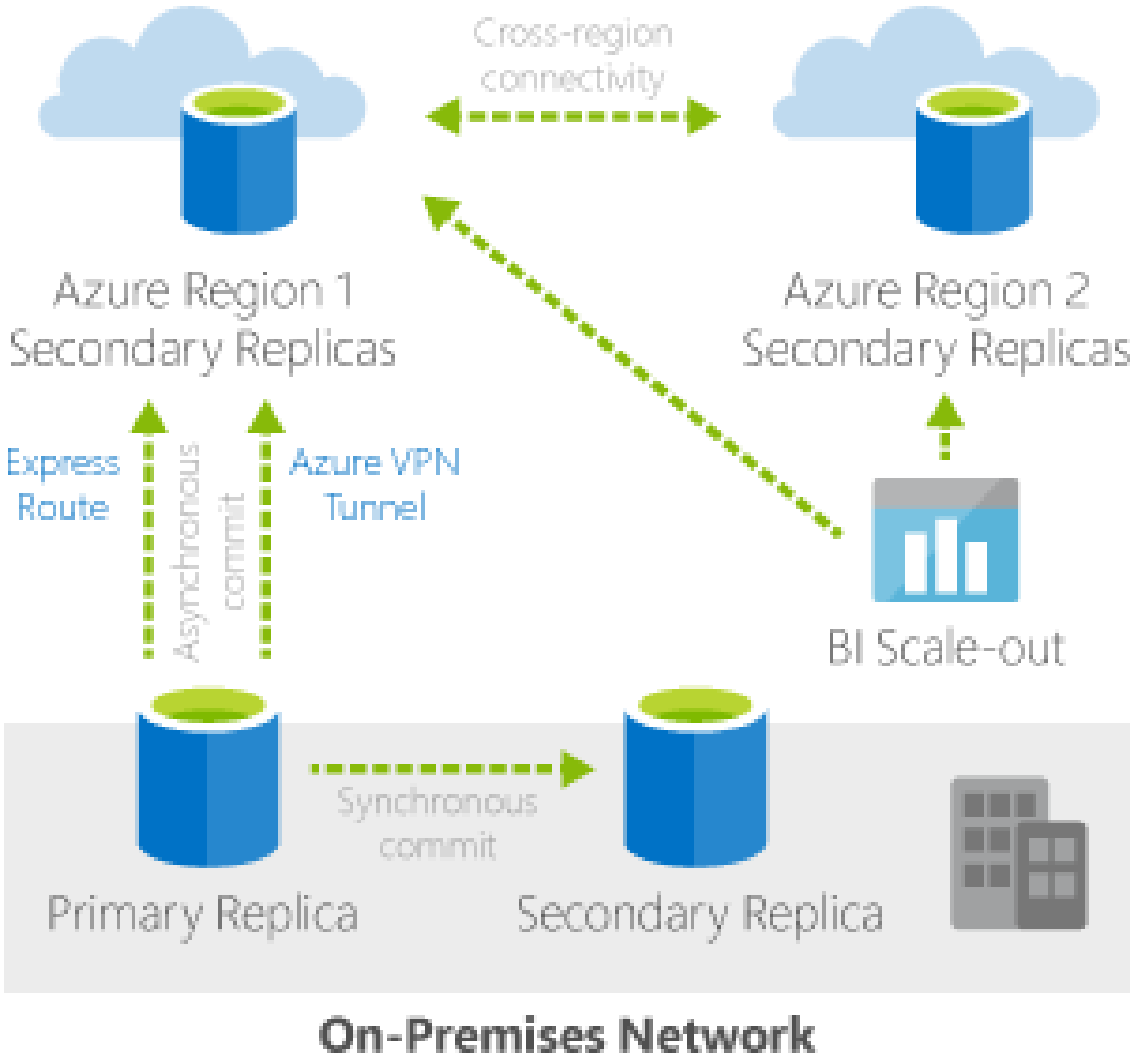
Azure SQL overview

- 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

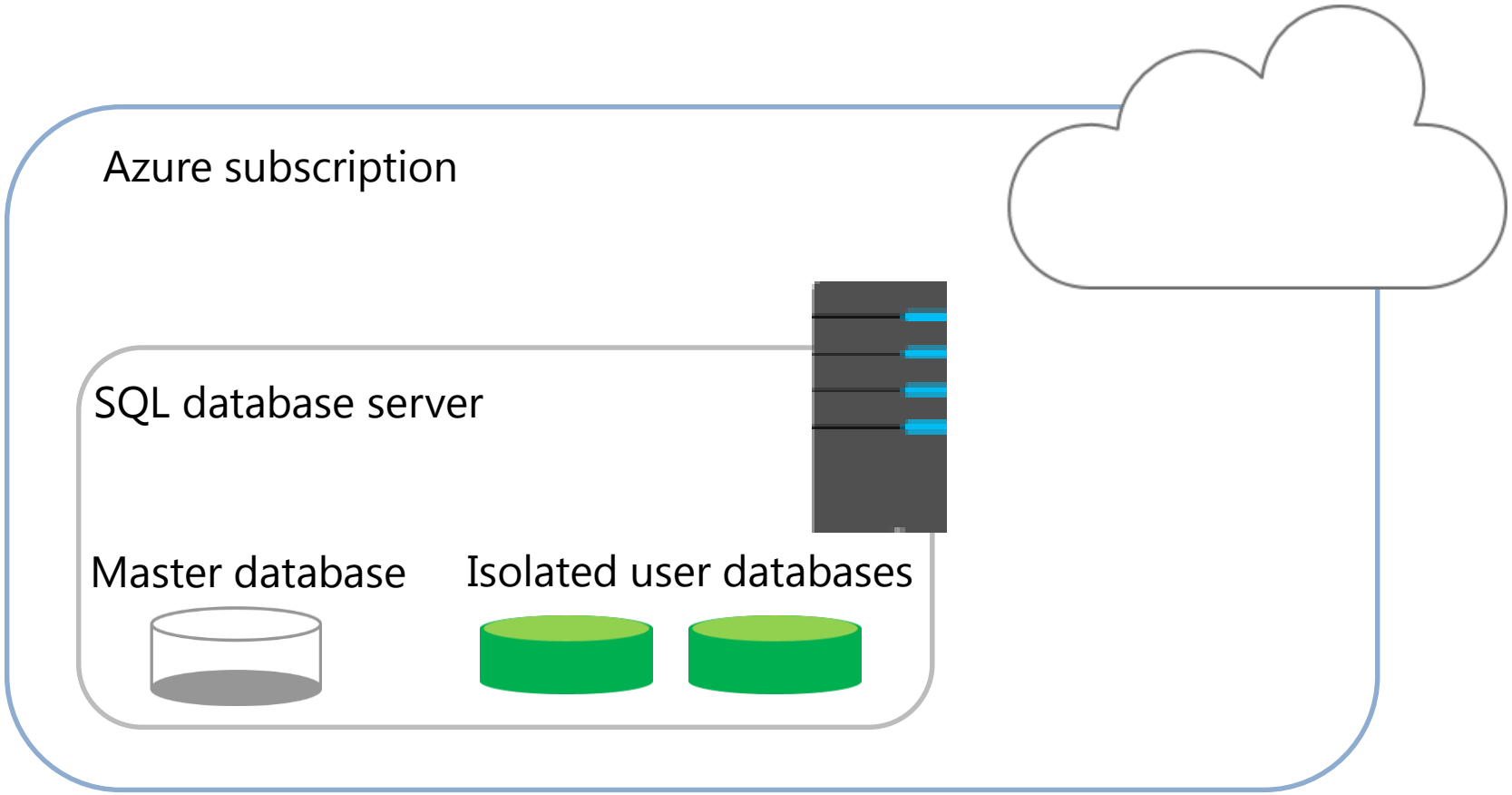
Improve business continuity



Creating Azure SQL databases

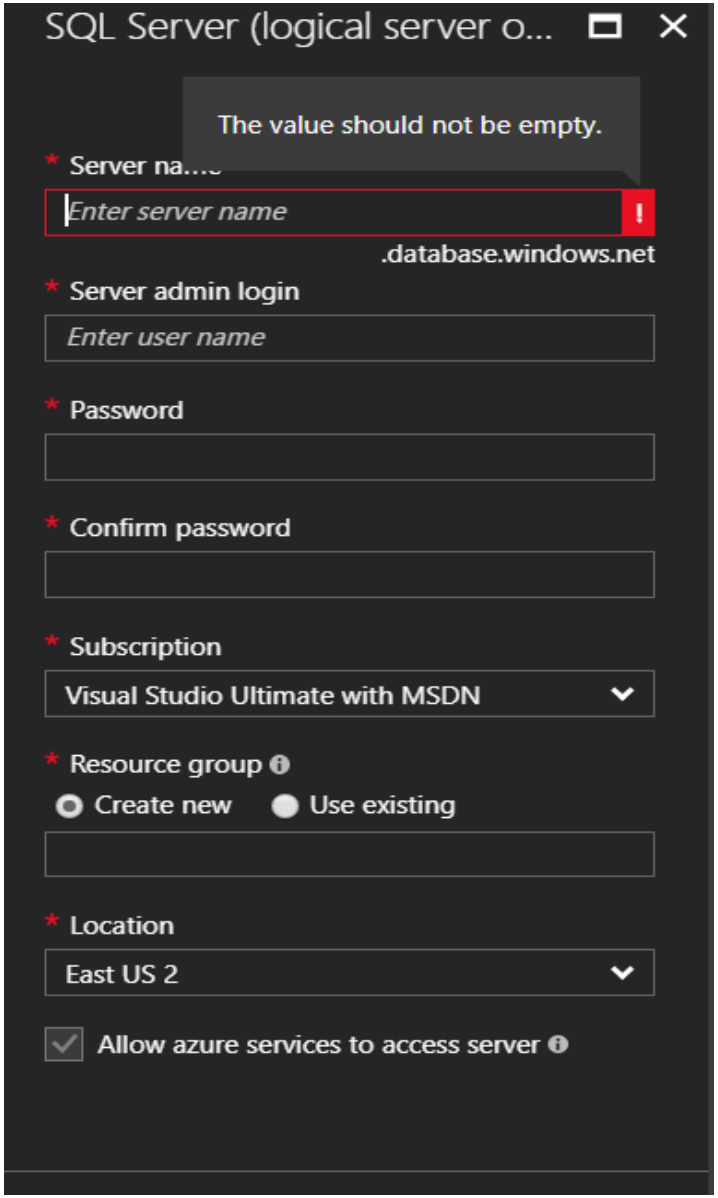
- Azure SQL databases concept
- Demo: Create new SQL database
- Demo: overview of features and metrics

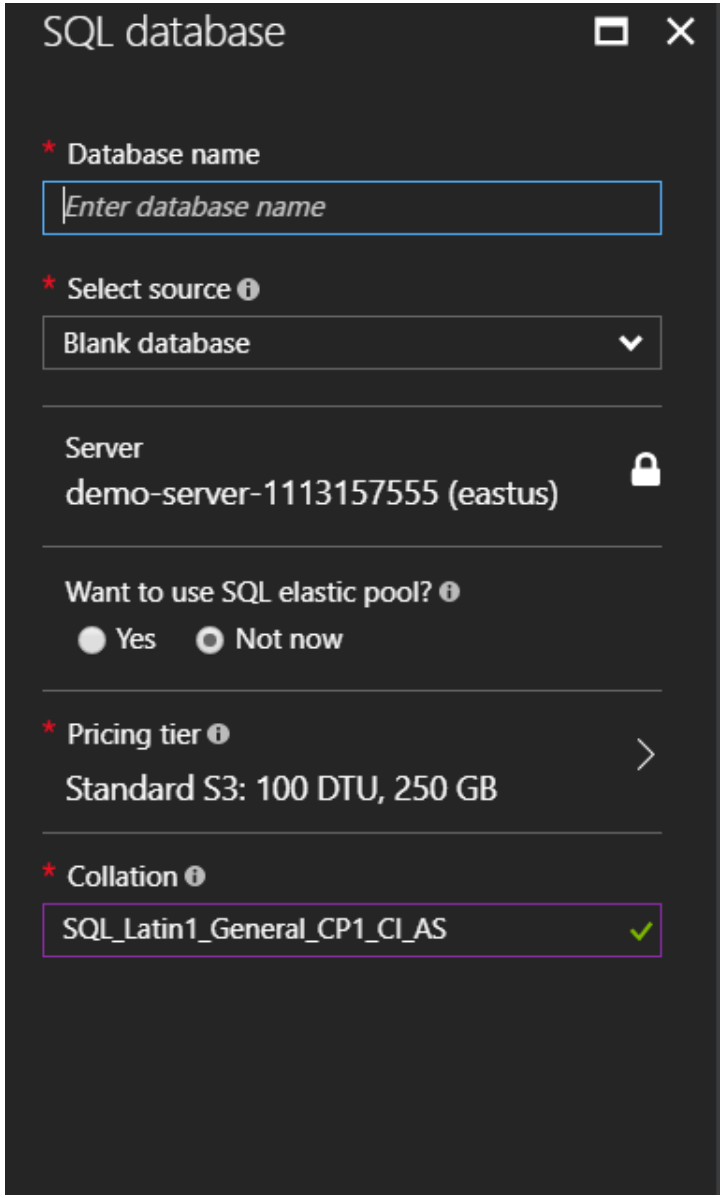
Azure SQL databases



- PaaS relational data store
- Built on SQL Server technologies

Create new SQL database through portal





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

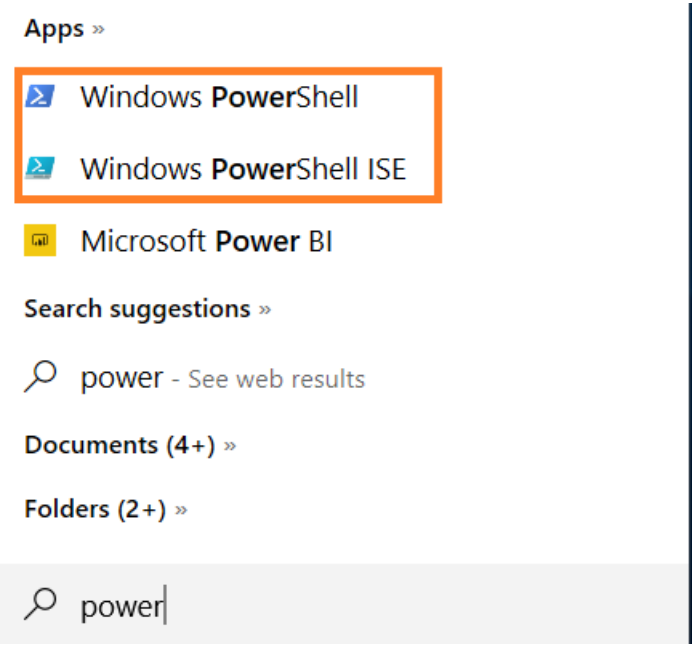
Azure automation tool - PowerShell

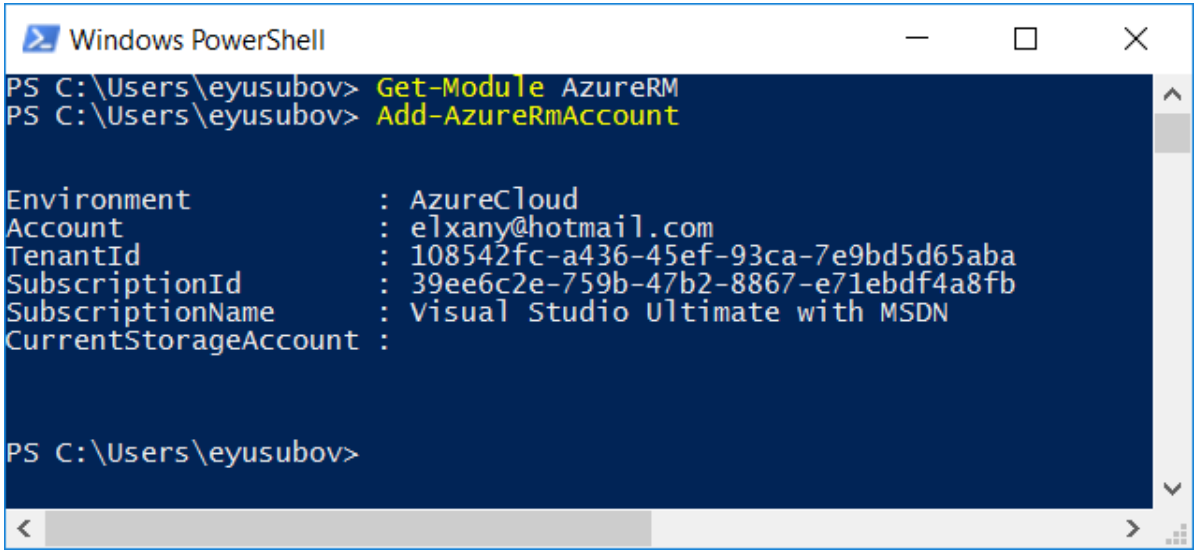
- PowerShell with Azure PowerShell modules
  - Scripts manage Azure resources from Win OS
  - Elastic database pool creation and management
  - Demo – elastic database feature to simplify data tier development and management, especially for SaaS applications

Azure PowerShell module

Azure Resource Management:

- Authenticate
  - **Add-AzureRmAccount**
- Select the target Azure subscription (if more than one exists):
  - **Get-AzureRmSubscription**
  - **Select-AzureRmSubscription**





Demo: Development tools

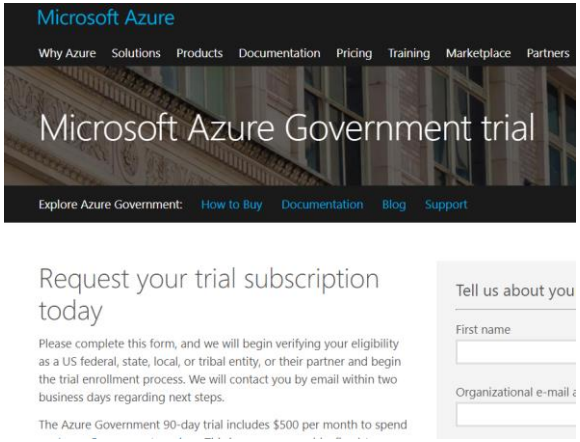
- Demo: connecting via SSMS
- Demo: running SQL scripts on SSMS
- Demo: running scripts within portal editor
- Demo: configure geo-replication
- T-SQL syntax not supported in SQL Database

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



Summary

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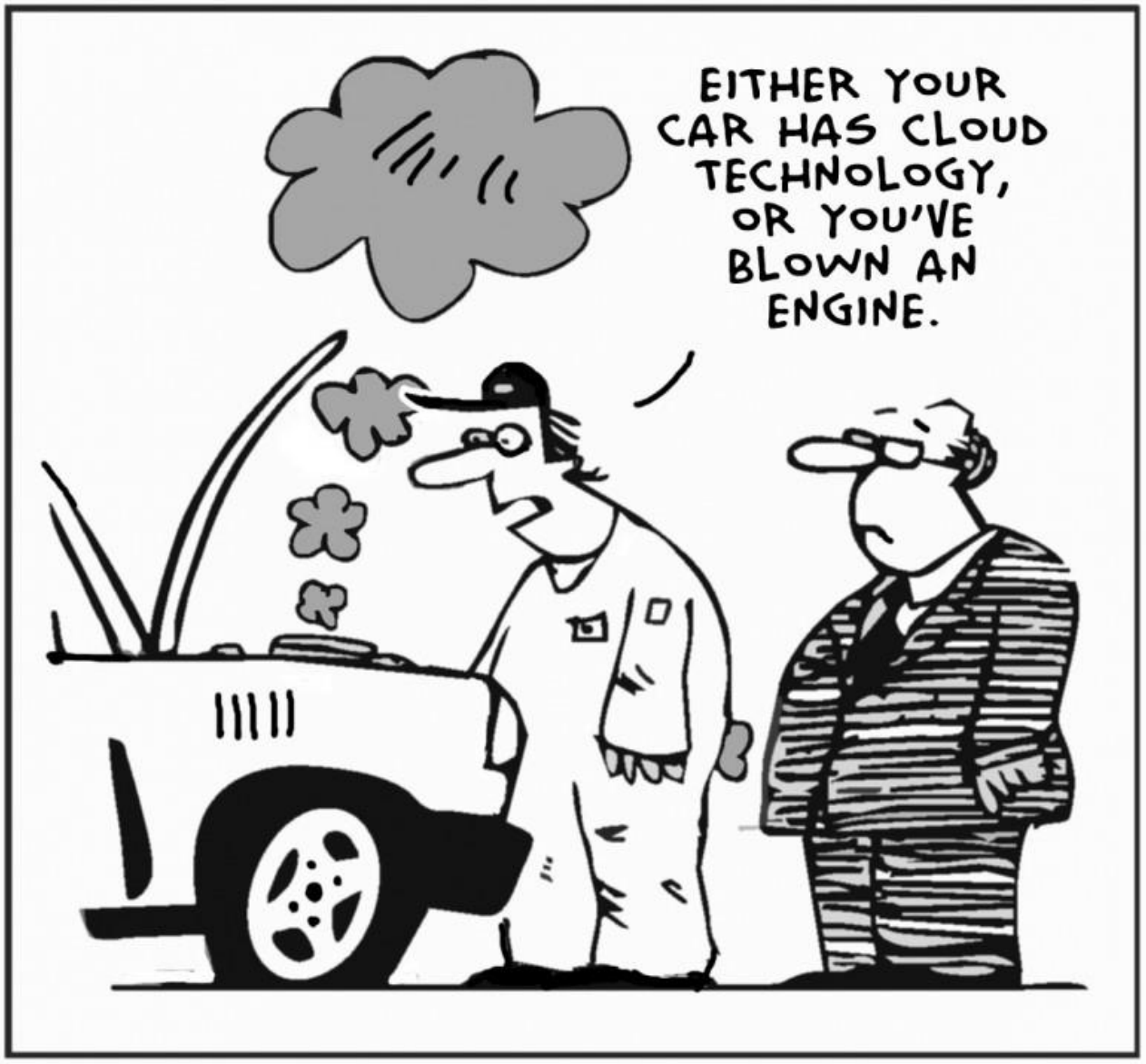

Thank you for coming!

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Thank you!

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