Microsoft Cloud Workshop

Azure security, privacy, and compliance

Hands-on lab step-by-step

January 2018

Contents

Azure security, privacy, and compliance hands-on lab step-by-step

Abstract and learning objectives

This whiteboard design session is designed to provide exposure to many of Microsoft Azure's Security features. The goal is to show an end-to-end solution, leveraging many of these technologies, but not necessarily doing work in every component possible. The architecture includes:

- Azure Virtual Machines and Networks with Network Security Groups
- Virtual Private Networks (Point to Point, Site to Site)
- Azure Web Apps
- Azure SQL DB and corresponding security features (Threat Detection, TDE, Column Level Encryption etc.)
- Azure Storage Encryption
- SQL Server Virtual Machines
- Azure IAM
- Azure Monitor and Log Analytics
- Power BI
- Azure Security Center
- Azure Key Vault Integrations
- Microsoft Azure Active Directory
- Microsoft Intune
- Conditional Access controls

Overview

Contoso is a multinational corporation, headquartered in the United States that provides insurance solutions worldwide. Its products include accident and health insurance, life insurance, travel, home, and auto coverage. Contoso manages data collection services by sending mobile agents directly to the insured to gather information as part of the data collection process for claims from an insured individual. These mobile agents are based all over the world and are residents of the region in which they work. Mobile agents are managed remotely and each regional corporate office has a support staff responsible for scheduling their time based on requests that arrive to the system.

They are migrating many of their applications via Lift and Shift to Azure and would like to ensure that they can implement the same type of security controls and mechanisms they currently have. They would like to be able to demonstrate their ability to meet compliance guidelines required in the various countries they do business. They have already migrated a web application and database server to their Azure instance and would like to enable various logging and security best practices for administrator logins, SQL Databases, and virtual network design.

In this hands-on lab, attendees will implement several of the security features of Azure to help support a GDPR compliant cloud infrastructure.

Requirements

1. Microsoft Azure subscription must be pay-as-you-go or MSDN.
    a. Trial subscriptions will not work.
2. A machine with the following software installed:
    a. Visual Studio 2017
    b. SQL Management Studio 2017
    c. Power BI Desktop

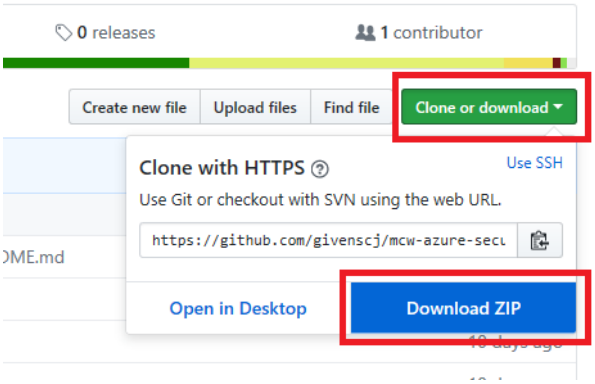
Before the hands-on lab

Duration: 30 minutes

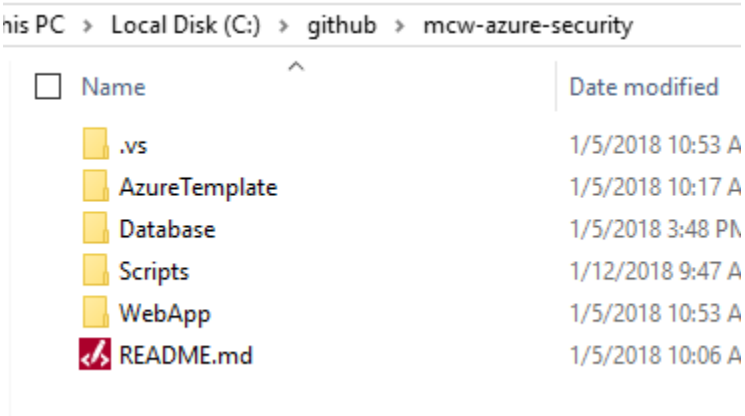
Synopsis: In this exercise, you will set up your environment for use in the rest of the hands-on lab. You should follow all the steps provided in the Before the Hands-on Lab section to prepare your environment *before* attending the workshop.

Task 1: Download GitHub resources

1. Open a browser window to the cloud workshop GitHub repository (https://github.com/givenscj/mcw-azure-security).
2. Select **Clone or download**, then select **Download Zip.**



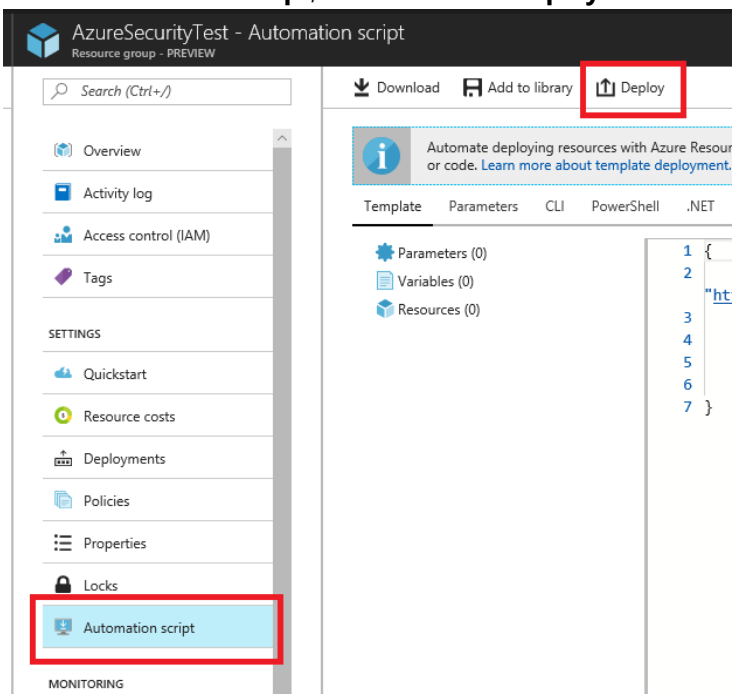
3. Extract the zip file to your local machine, be sure to keep note of where you have extracted the files, you should now see a set of folders:



Task 2: Deploy resources (virtual machine, etc.) to Azure

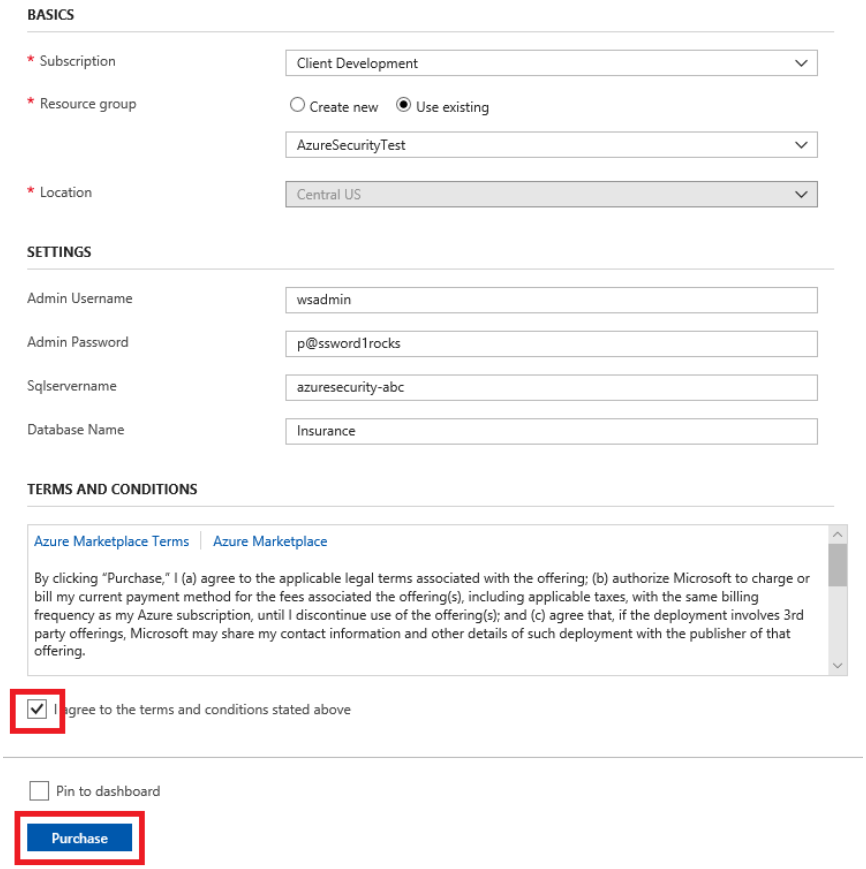
1. Open your Azure Portal.
2. Select **Resource groups.**
3. Select **+Add.**
4. Type a resource group name, such as **azsecurity-[your initials or first name].**
5. Select **Create.**
6. Select **Refresh** to see your new resource group displayed and select it.

7. Select **Automation Script**, and then select **Deploy.**

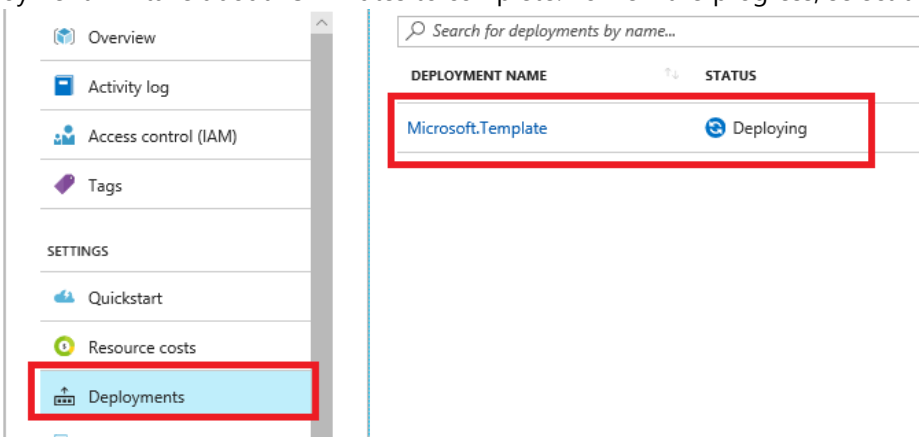


8. Select **Build your own template in the editor.**
9. In the extracted folder, open the **\Scripts\template.json.**
10. Copy and paste it into the window.
11. Select **Save**, you will see the dialog with the input parameters. Fill out the form:
    a. Subscription: select your **subscription.**
    b. Resource group: Use an existing Resource group, or create a new one by entering a unique name, such as **azsecurity-[your initials or first name]**.
    c. Location: Select a **location** for the Resource group. Recommend using East US, East US 2, West Central US, or West US 2.
    d. Modify the **sqlservername** to be something unique such as "azsecurity-[your initials or first name]"
    e. Fill in the remaining parameters, but if you change anything, be sure to note it for future reference throughout the lab.
    f. Check the **I agree to the terms and conditions stated above** checkbox.

g. Select **Purchase.**



12. The deployment will take about 15 minutes to complete. To view the progress, select the **Deployments** link.



a. As part of the deployment, you will see the following items created:
   - One storage account
   - Three virtual networks
   - Three network security groups
   - Three virtual machines (db-1, web-1, paw-1)
     - IIS is installed on web-1 via a DSC script from the GitHub repository

- One SQL Azure Server
- One Recovery Services vault

18 items

NAME	TYPE
azuresecurity-abc	SQL server
SampleDB	SQL database
azuresecuritycloudws127	Storage account
db-1	Virtual machine
db-1-nic	Network interface
DbTrafficOnly	Network security group
dbVnet	Virtual network
mainVNet	Virtual network
paw-1	Virtual machine
paw-1-ip	Public IP address
paw-1-nic	Network interface
paw-1-nsg	Network security group
VMBackupVault	Recovery Services vault
web-1	Virtual machine
web-1-ip	Public IP address
web-1-nic	Network interface
WebTrafficOnly	Network security group
webVNet	Virtual network

13. See Appendix A for detailed steps on creating these components without using an ARM template.

You should follow all steps provided *before* attending the Hands-on lab.

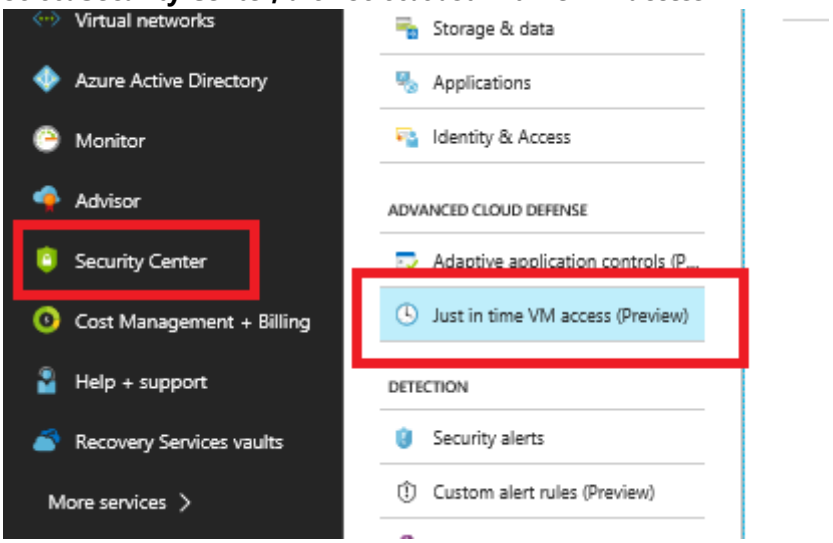
Exercise 1: Implementing Just-In-Time (JIT) access

Duration: 15 minutes

Synopsis: In this exercise, attendees will secure a Privileged Access Workstation (PAW) workstation using the Azure Security Center Just In Time Access feature.

Task 1: Setup virtual machine with JIT

1. In a browser, navigate to your Azure portal (https://portal.azure.com)
2. Select **Security Center,** then Select **Just in time VM access**



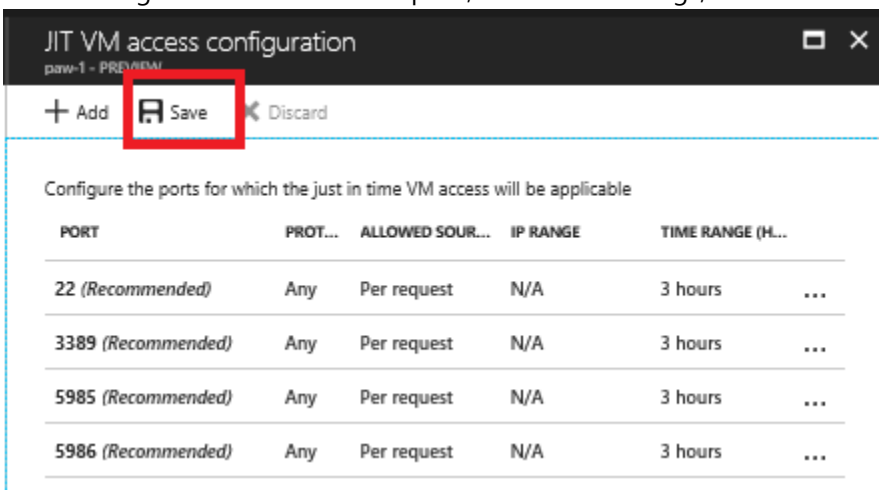
NOTE: Your subscription may not be set up with the **Standard** tier; if that is the case then do the following:

- Select **Security Policy.**
- Expand the first node to show your subscriptions, select the subscription.
- Toggle the **Inheritance** setting to **Unique.**
- Select the **Standard** tier.
- Select **Save**, note that it may take a few minutes for everything to "light up."
- Select **Just in time VM access.**

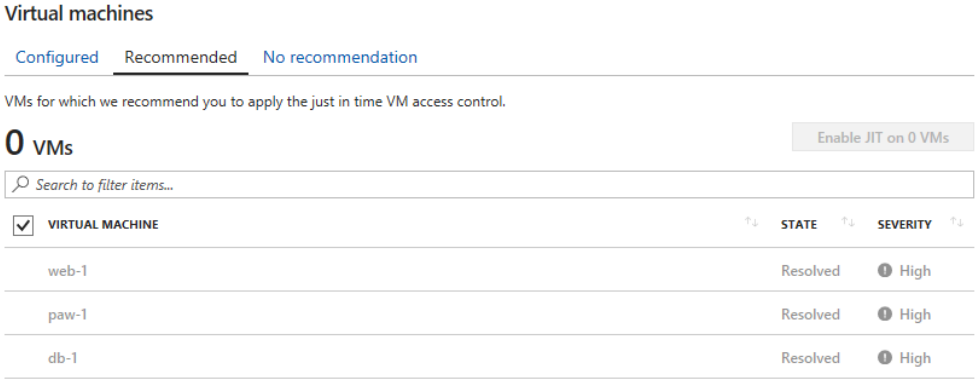
3. Select the **Recommended** tab, and then check the checkbox to select all the virtual machines, and then select the **Enable JIT on 3 VMs** link.

NOTE: It could take up to 5 minutes for new VMs to show up if you upgraded to standard tier security

4. In the configuration window that opens, review the settings, then select **Save.**

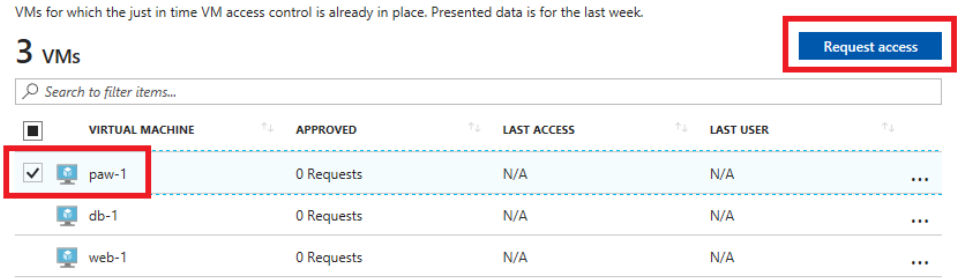


You should now see the states change to **Resolved.**

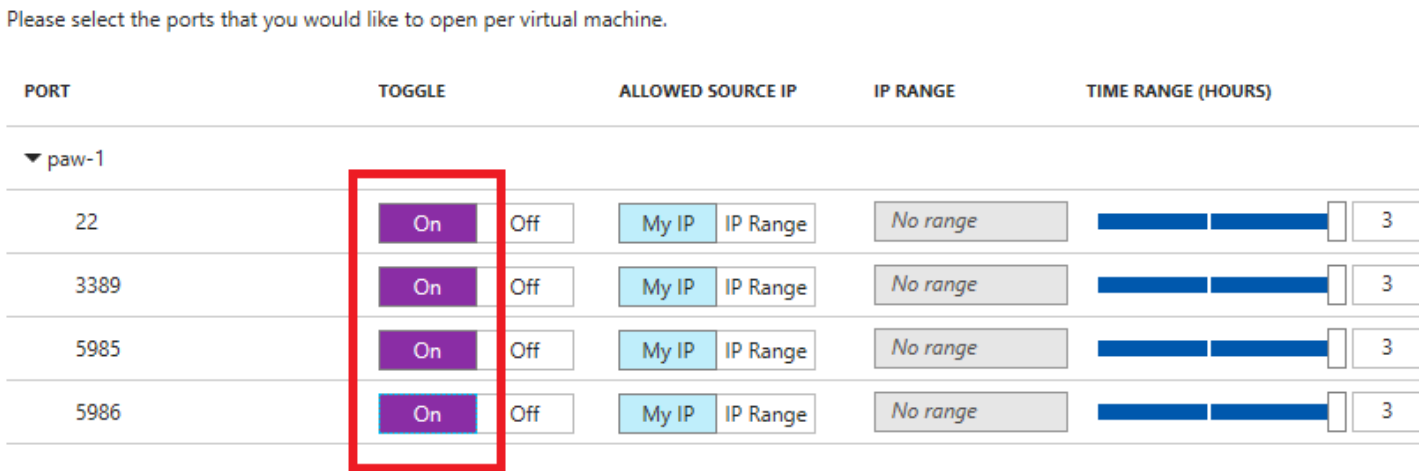


Task 2: Perform a JIT request

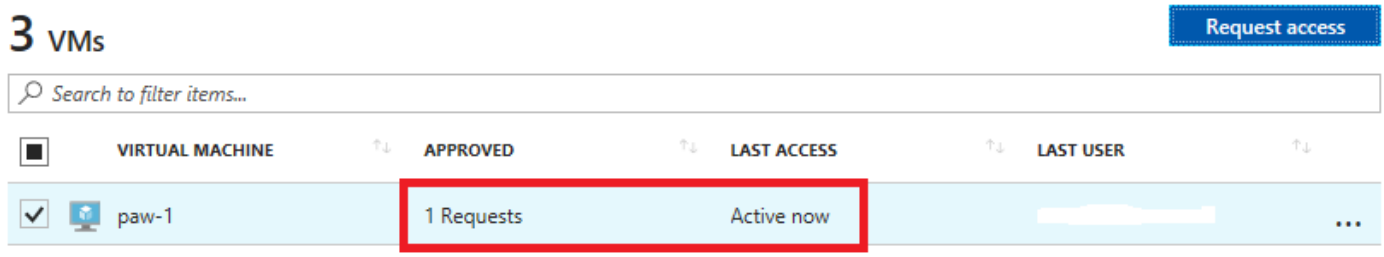
1. Select the **Configured** tab. You should now see all the machines listed.
2. Select the **paw-1** virtual machine, and then select **Request Access.**



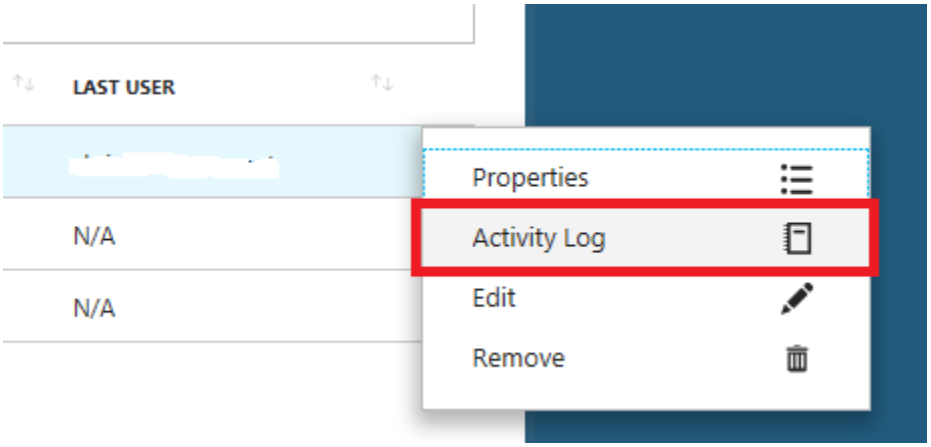
3. For each of the ports, select the **On** toggle button.



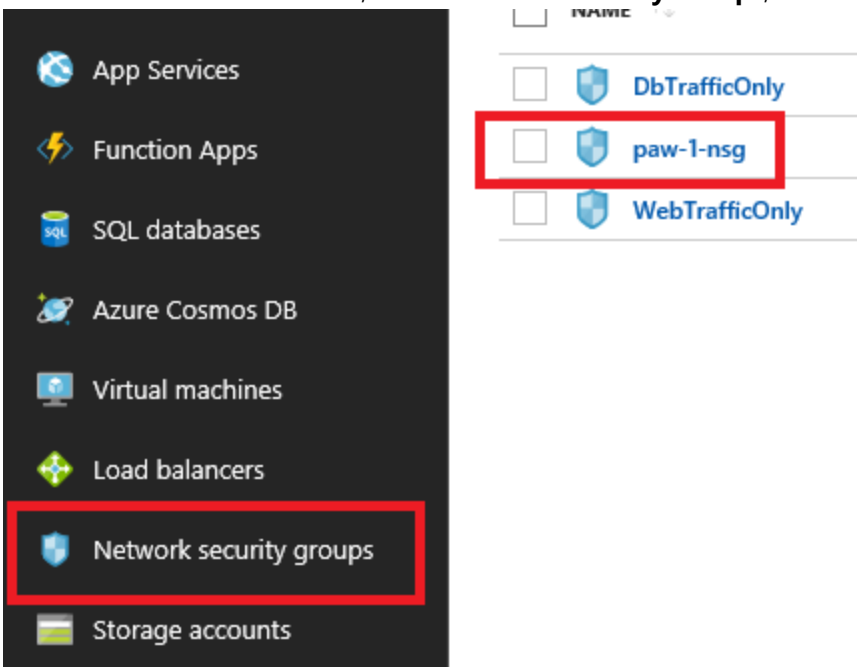
4. At the bottom of the dialog, select **Open ports**. You should now see the **APPROVED** requests have been incremented and the **LAST ACCESS** is set to **Active now.**



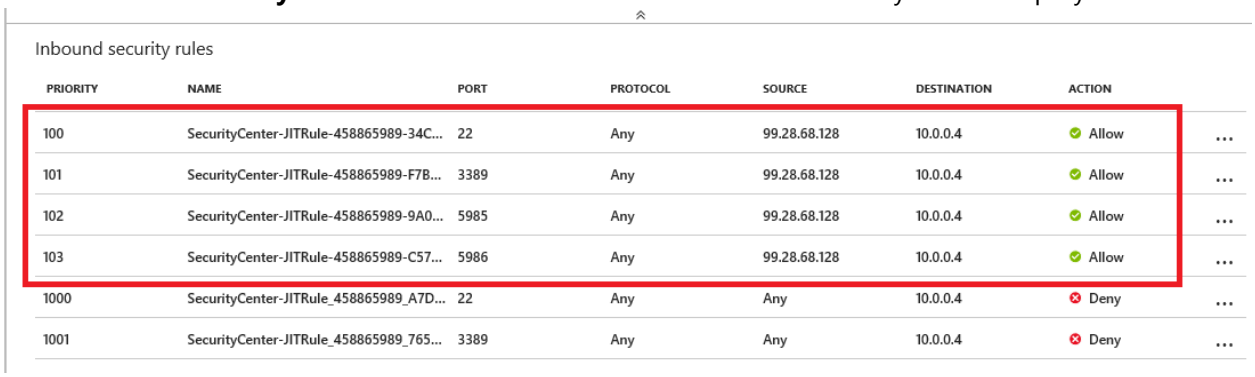
5. Select the ellipses, then select **Activity Log**, you will be able to see a history of who requests access to the virtual machines.



6. In the Azure Portal main menu, select **Network Security Groups**, then select **paw-1-nsg.**



7. Select **Inbound security rules.** You should now see a set of inbound security rules set up by JIT Access.



Inbound security rules

PRIORITY	NAME	PORT	PROTOCOL	SOURCE	DESTINATION	ACTION	
100	SecurityCenter-JITRule-458865989-34C...	22	Any	99.28.68.128	10.0.0.4	Allow	...
101	SecurityCenter-JITRule-458865989-F7B...	3389	Any	99.28.68.128	10.0.0.4	Allow	...
102	SecurityCenter-JITRule-458865989-9A0...	5985	Any	99.28.68.128	10.0.0.4	Allow	...
103	SecurityCenter-JITRule-458865989-C57...	5986	Any	99.28.68.128	10.0.0.4	Allow	...
1000	SecurityCenter-JITRule_458865989_A7D...	22	Any	Any	10.0.0.4	Deny	...
1001	SecurityCenter-JITRule_458865989_765...	3389	Any	Any	10.0.0.4	Deny	...

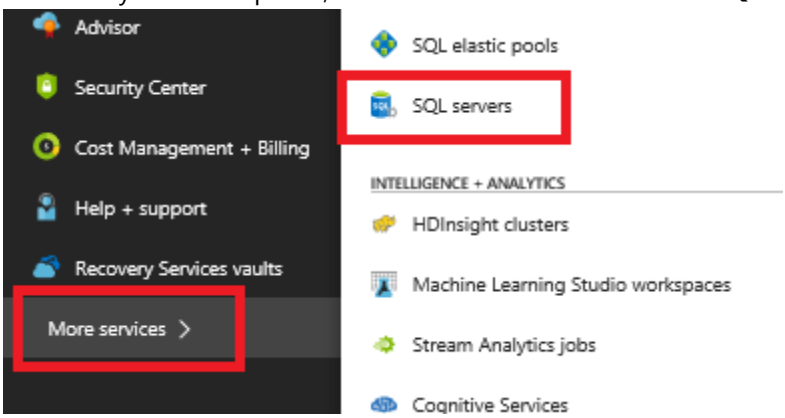
Exercise 2: Securing the Web Application and Database

Duration: 45 minutes

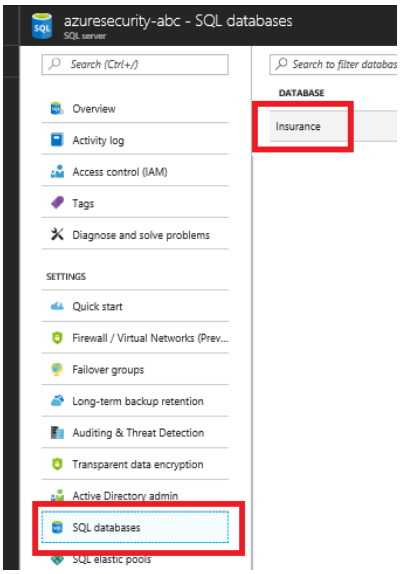
Synopsis: In this exercise, attendees will utilize Azure SQL features to data mask database data and utilize Azure Key Vault to encrypt sensitive columns for users and applications that query the database.

Task 1: Setup the database

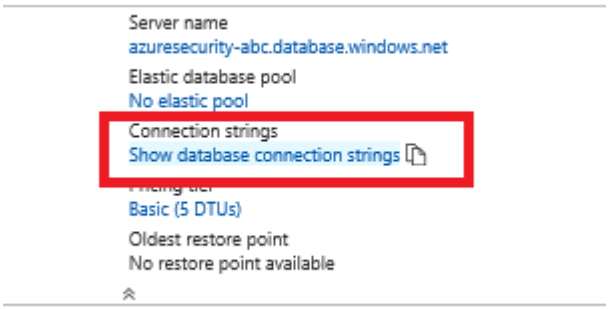
1. Switch to your Azure portal, click **More Services** then select **SQL Servers.**



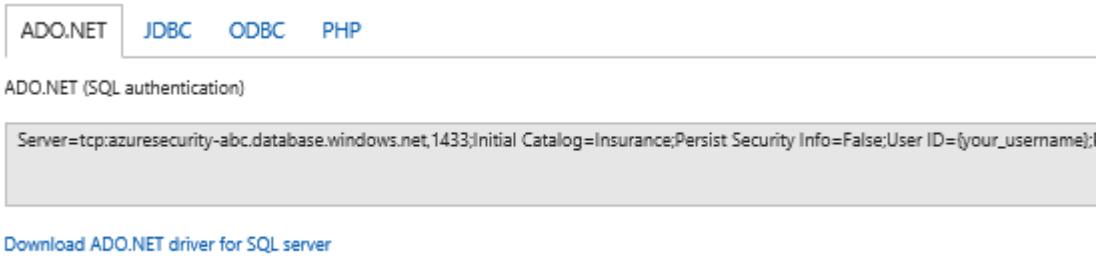
2. Select the **Azure SQL** database server you created using the Azure Manager template.
3. Select **SQL Databases**, then select the **SampleDB** database.



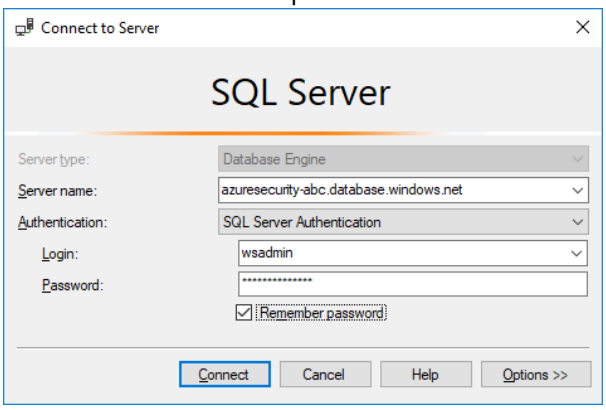
4. In the summary section, select the **Show database connection strings.**



5. Take note of the connection string for later in this lab, specifically the **Server** parameter:

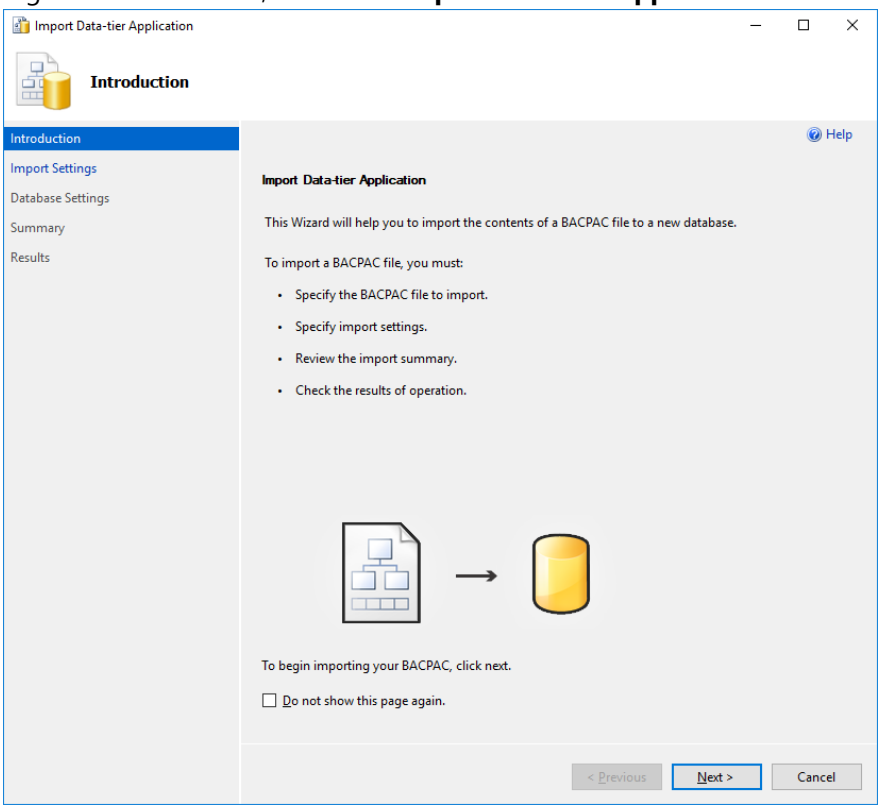


6. Open **SQL Server Management Studio.**
7. Enter the database server name from above.
8. Enter the username and password used from the Azure Template deployment (**wsadmin** - **p@ssword1rocks**).

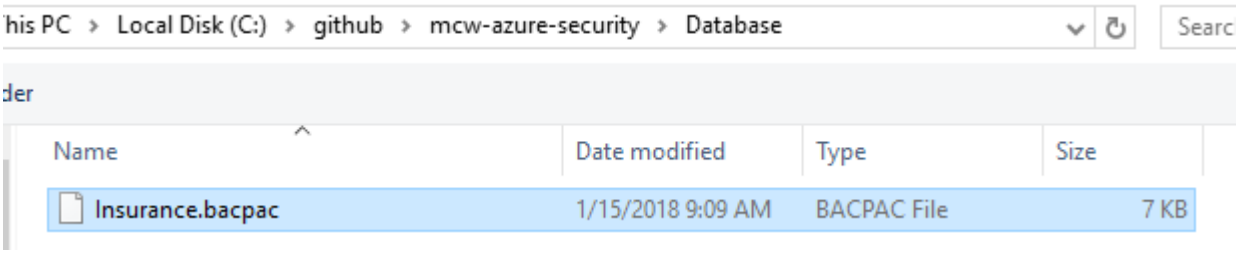


9. Select **Connect**, in the **New Firewall Rule** dialog, select **Sign In.**
10. Sign in as your Azure tenant admin.
11. In the dialog, select **OK**, notice how your IP address will be added for connection.

12. Right-click **Databases**, and select **Import Data-tier Application.**



13. In the Introduction dialog, select **Next.**
14. Select **Browse**, navigate to the extracted **Database** directory, and select the **Insurance.dacpac** file.

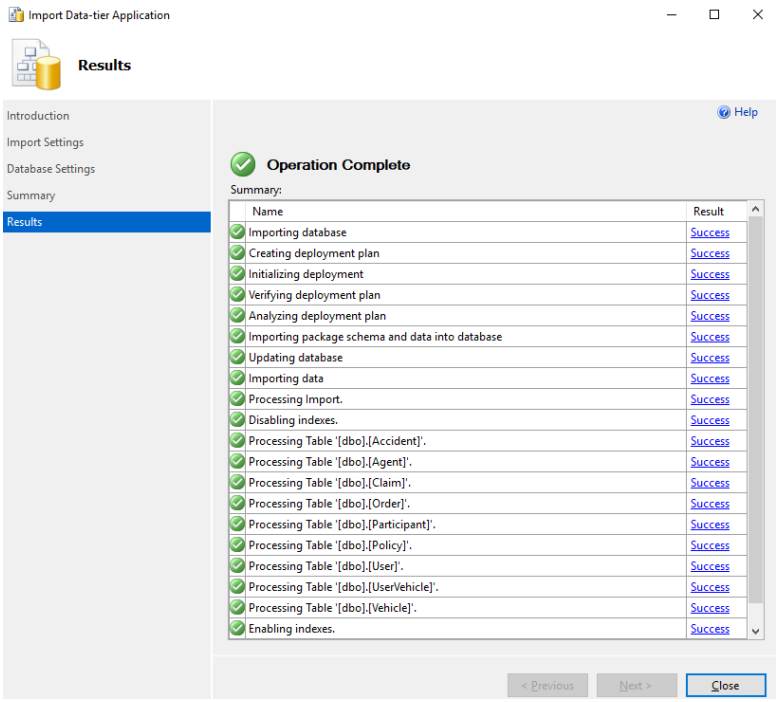


15. Select **Open.**
16. On the **Import Settings** dialog, select **Next.**
17. On the **Database Settings** dialog, select **Next.**

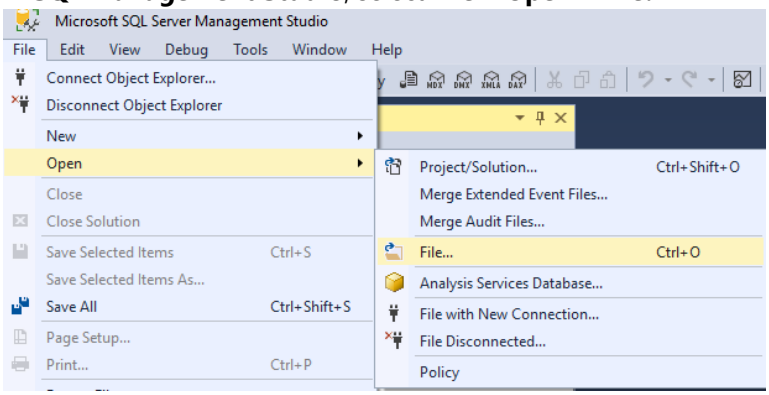
    NOTE: If you get an error, close and re-open SQL Management Studio try the import again.

18. Select **Finish** and the database will deploy to Azure.

19. Once completed, select **Close.**



20. In **SQL Management Studio**, select **File->Open->File.**

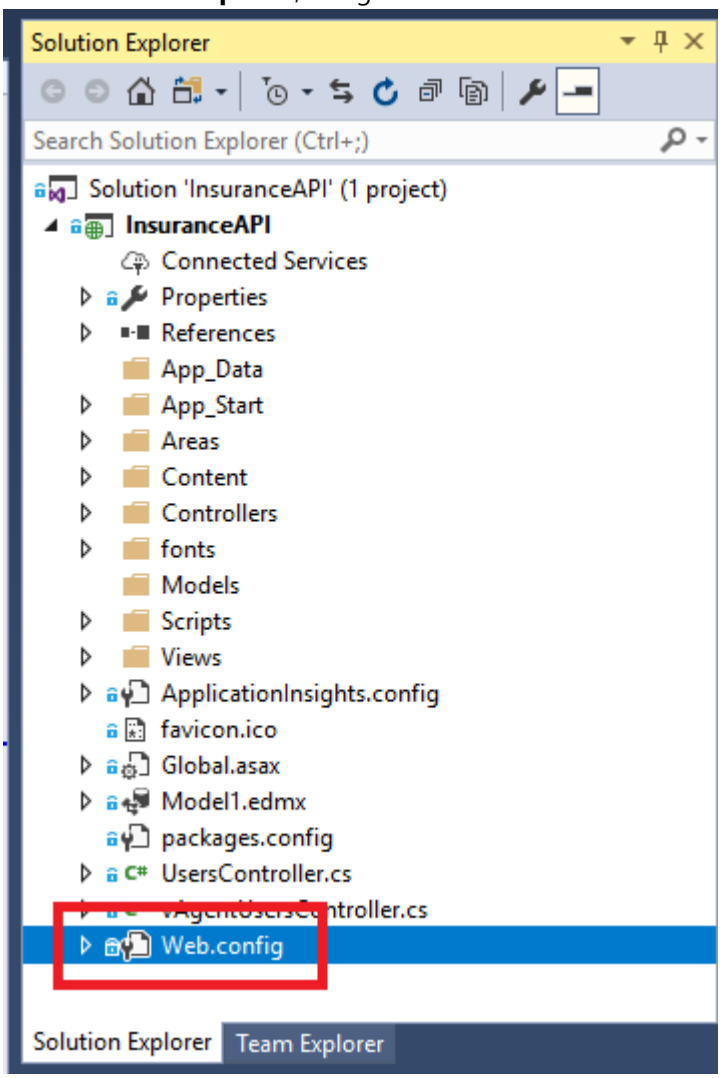


21. Browse to the extracted GitHub folder, select the **\Database\00_CreateLogin.ps1** file.
22. Ensure that the **master** database is selected.
23. Run the script to create a login called **agent.**
24. Browse to the extracted folder, select the **\Database\01_CreateUser.ps1** file.
25. Ensure that the **Insurance** database is selected.
26. Run the script to create a non-admin user called **agent.**

Task 2: Test the web application solution

1. In the extracted directory, double-click the **/WebApp/InsuranceAPI/InsuranceAPI.sln** solution file, and Visual Studio will open.

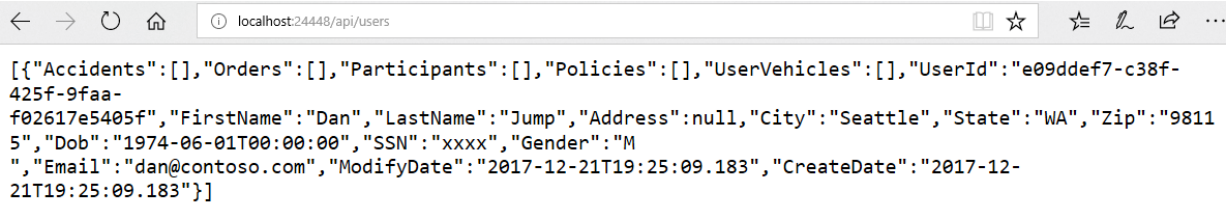
2. In the **Solution Explorer**, navigate to and double-click the **web.config** file to open it.



3. Update the web.config (line 72) to point to the **Insurance** database created in Task 2. You should only need to update the server name to point to your Azure SQL Server.

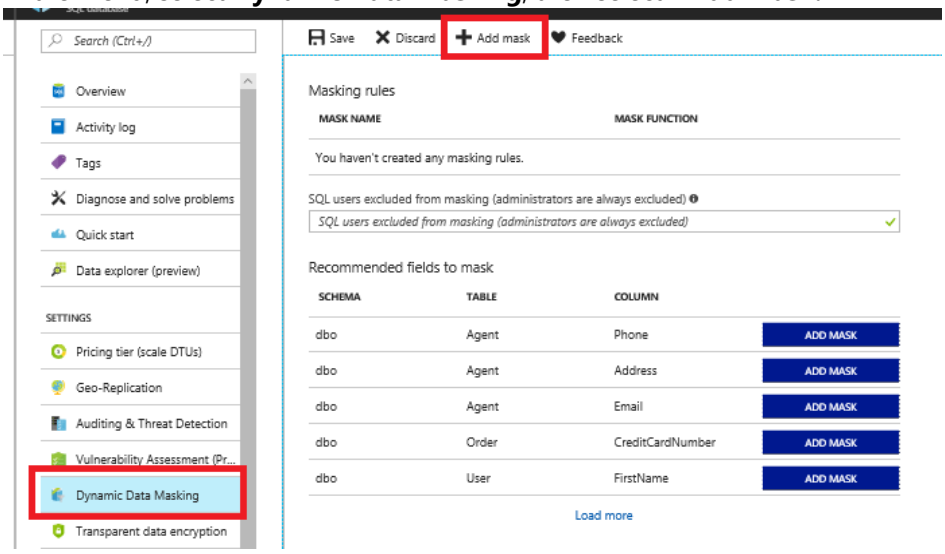
4. Run the **InsuranceAPI** solution and press **F5.**
5. In the browser window that opens, browse to http://localhost:portno/api/Users you should see a json response that shows an unmasked SSN column.

NOTE: Depending on your browser, you may need to download to view the json response.

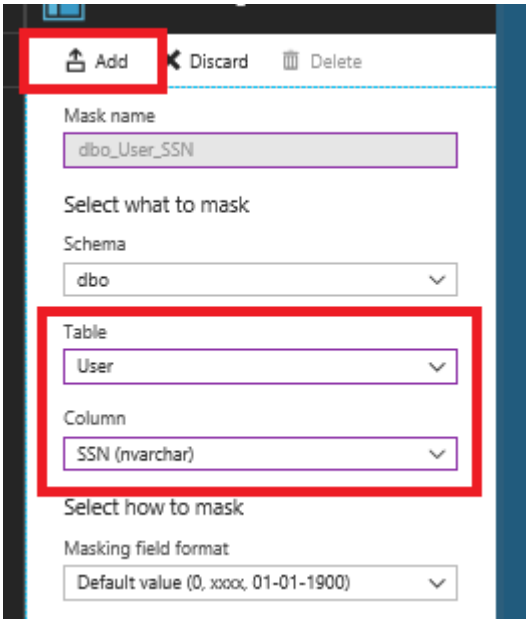


Task 3: Utilize data masking

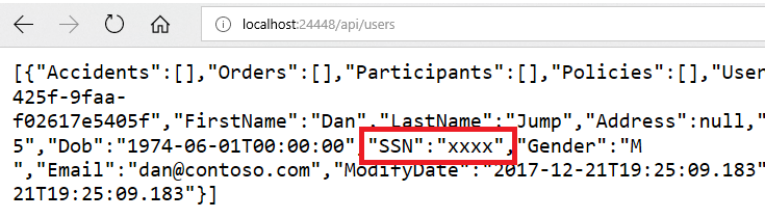
1. Switch to the Azure Portal.
2. Select **SQL databases.**
3. Select the **Insurance** database.
4. In the menu, select **Dynamic Data Masking**, then select **+Add Mask.**



5. Select the **User** table.
6. Select the **SSN** column.
7. Select **Add.**



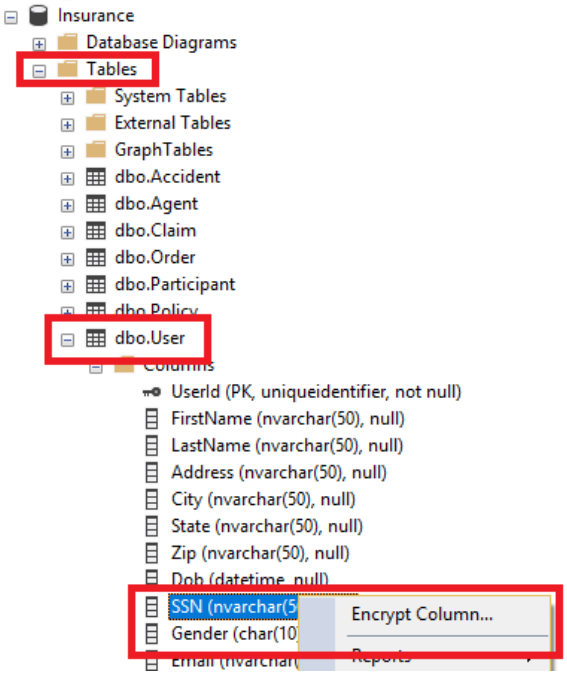
8. Switch back to your InsuranceAPI solution, refresh the page, and you should see the SSN column is now masked with **xxxx.**



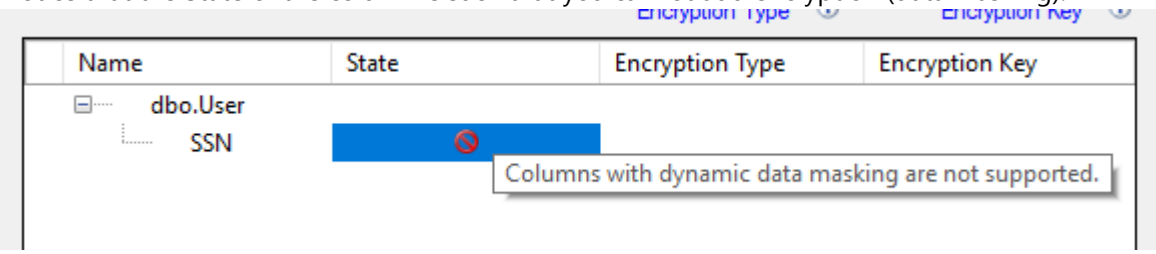
9. Close **Visual Studio.**

Task 4: Utilize Column Encryption with Azure Key Vault

1. Switch to **SQL Management Studio.**
2. In the extracted directory, navigate to the **Database** directory.
3. Open the **02_PermissionSetup.sql** file, copy and paste the TSQL to the Query Window.
4. Switch to the **Insurance** database, and execute the SQL statement.
5. In the **Object Explorer**, expand the **Insurance** node
6. Expand the **Tables** node.
7. Expand the **User** table node.
8. Expand the **Columns** node.
9. Right-click the **SSN** column, and select **Encrypt Column.**

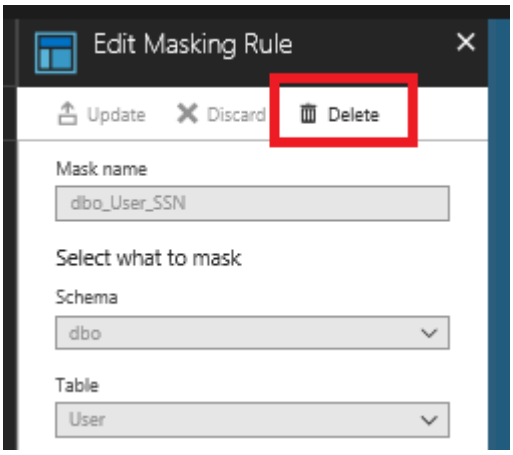


Notice that the State of the column is such that you cannot add encryption (data masking):

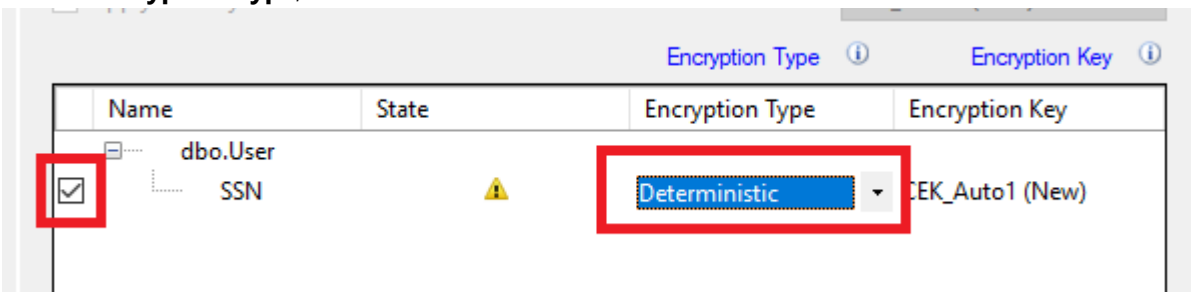


10. Select **Cancel.**

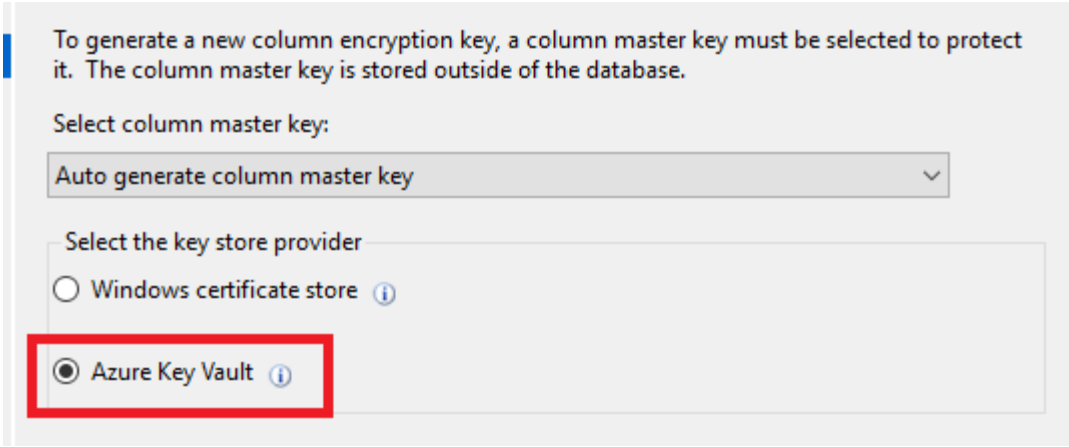
11. Switch back to the Azure Portal, and select the User.SSN data masking.
12. Select **Delete.**



13. Select **Save.**
14. Switch back to **SQL Management Studio.**
15. Right-click the **SSN** column, and select **Encrypt Column.**
16. Check the checkbox next to the **SSN** column.
17. For the **Encryption Type**, and select **Deterministic.**



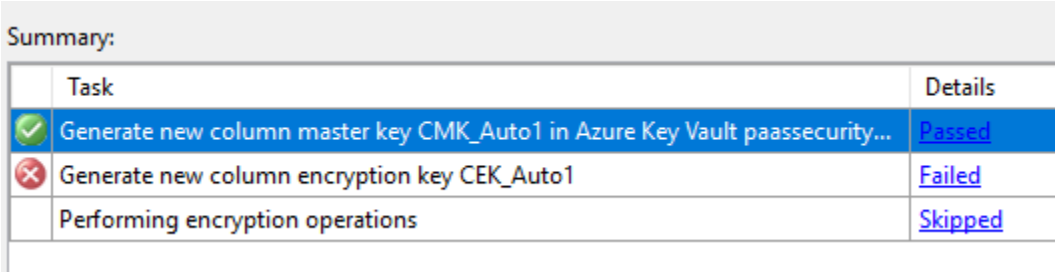
18. Select **Next.**
19. For the encryption select **Azure Key Vault** in the dialog.



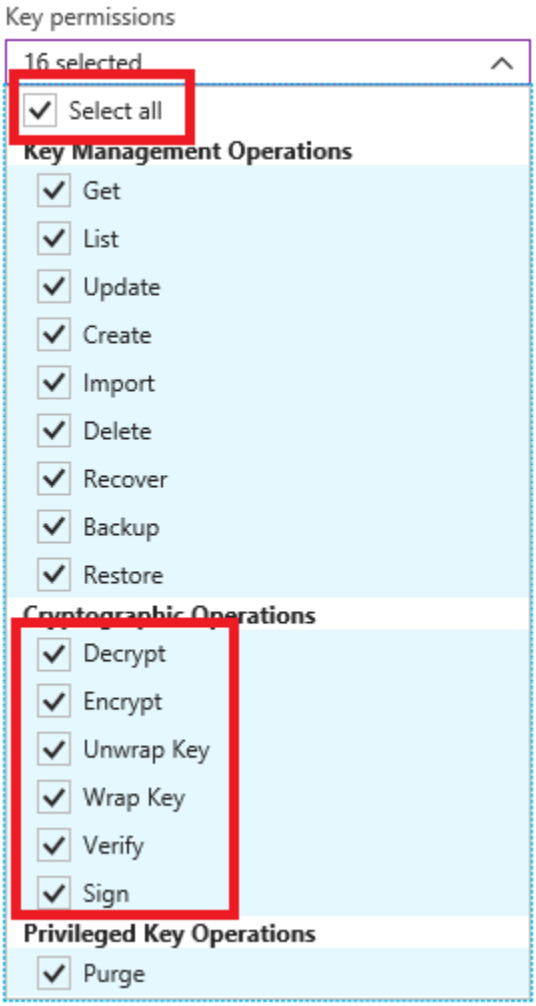
20. Select **SignIn.**
21. Sign in with your Azure Portal credentials.
22. Select your Azure Key Vault.
23. Select **Next.**
24. On the **Run Settings**, select **Next.**

25. Select **Finish**, and the configured will start.

NOTE: You may receive a "wrapKey" error. If so, ensure that your account has been assigned those permissions in the Azure Key Vault.

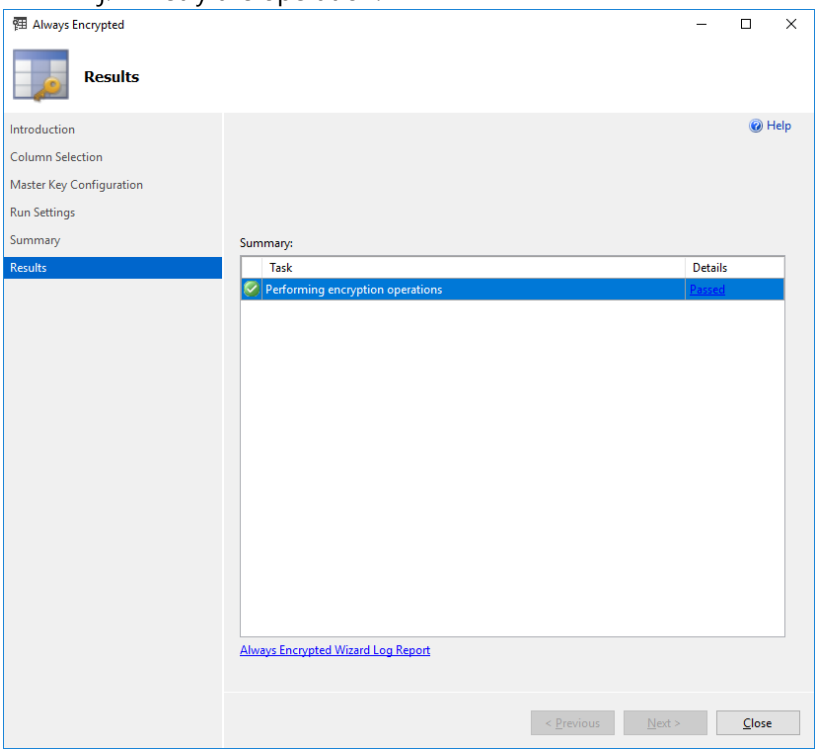


a. Select **Key vault.**
b. Select your key vault.
c. Select **Access policies.**
d. Select your account.
e. Select **Key permissions**, and select **Select all.**

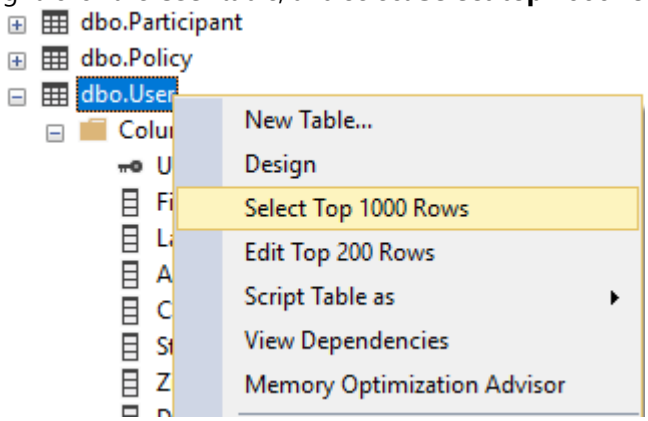


f. Select **Secret permissions**, and select **Select all.**
g. Select **Certificate permissions**, and select **Select all.**
h. Select **OK.**

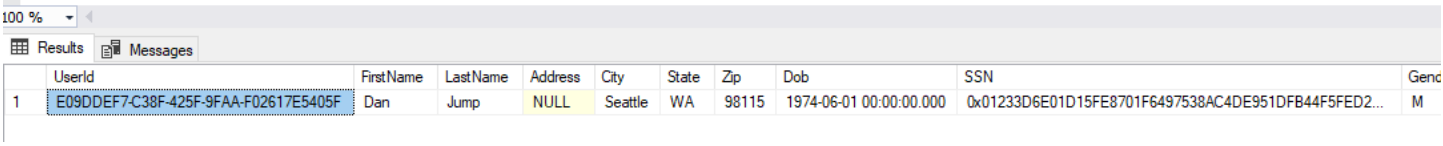
i. Select **Save.**
j. Retry the operation.



26. Select **Close.**
27. Right-click the **User** table, and select **Select top 1000 rows.**



You will notice the SSN column is encrypted based on the new Azure Key Vault key.



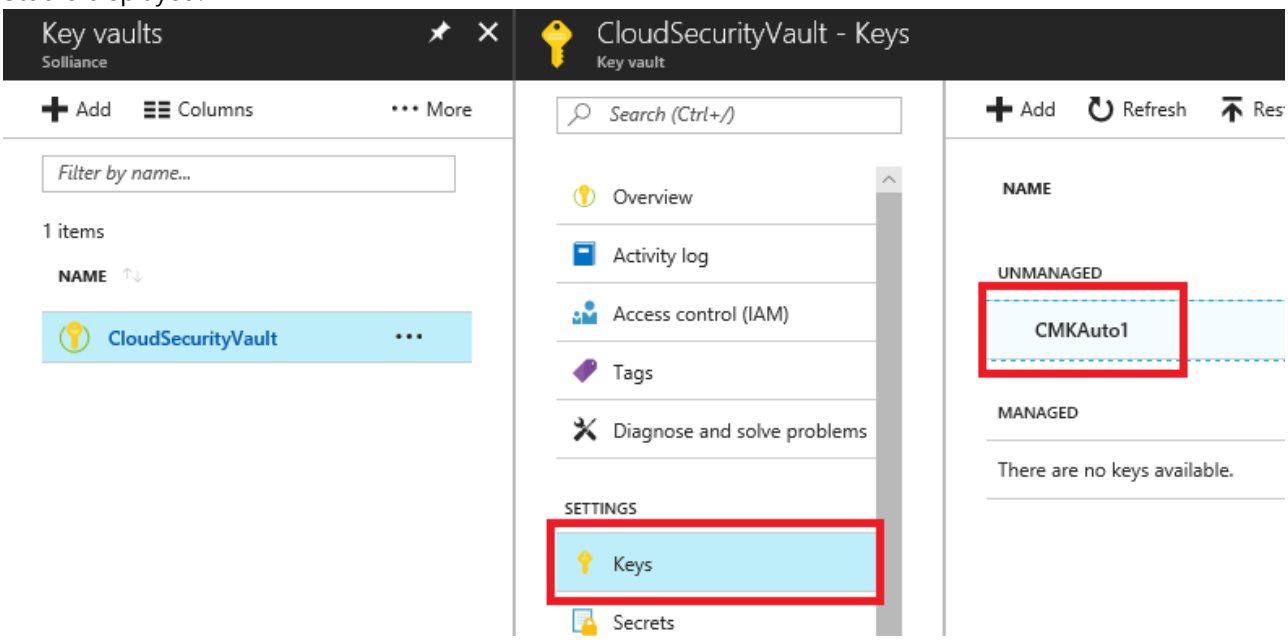
100 %

Results | Messages

	UserId	FirstName	LastName	Address	City	State	Zip	Dob	SSN	Genc
1	E09DDEF7-C38F-425F-9FAA-F02617E5405F	Dan	Jump	NULL	Seattle	WA	98115	1974-06-01 00:00:00.000	0x01233D6E01D15FE8701F6497538AC4DE951DFB44F5FED2...	M

28. Switch to the Azure Portal.
29. Select **Key Vaults.**

30. Select your Azure Key Vault, and then select **Keys**. You should see the key created from the SQL Management Studio displayed:



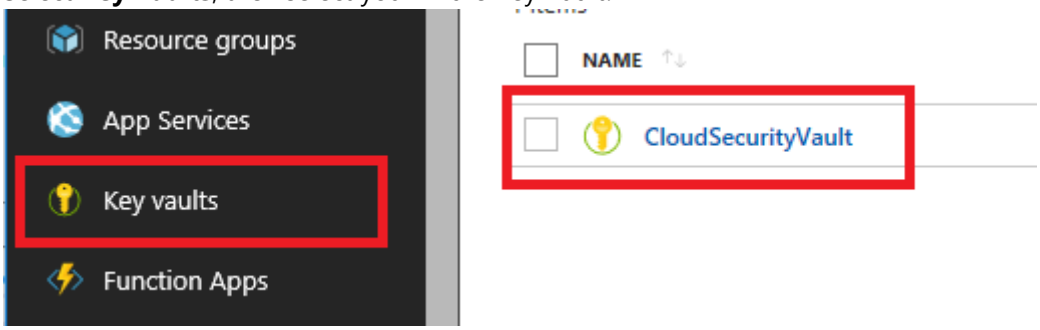
Exercise 3: Migrating to Azure Key Vault

Duration: 30 minutes

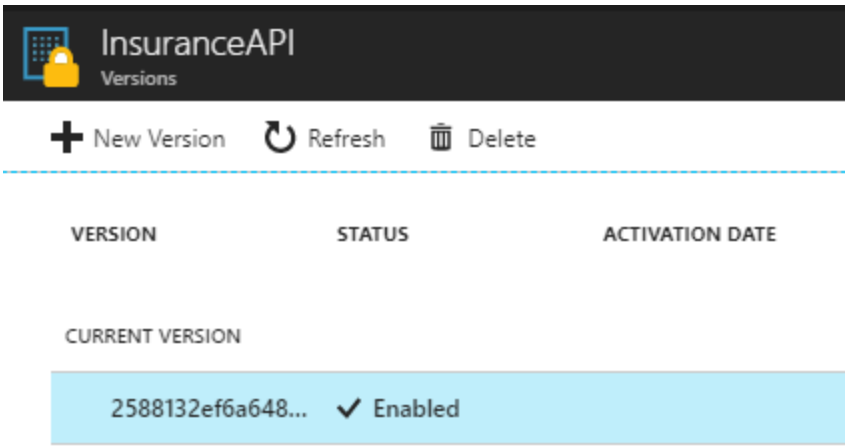
Synopsis: In this exercise, attendees will learn how to migrate web application to utilize Azure Key Vault rather than storing valuable credentials (such as connection strings) in application configuration files.

Task 1: Create an Azure Key Vault secret

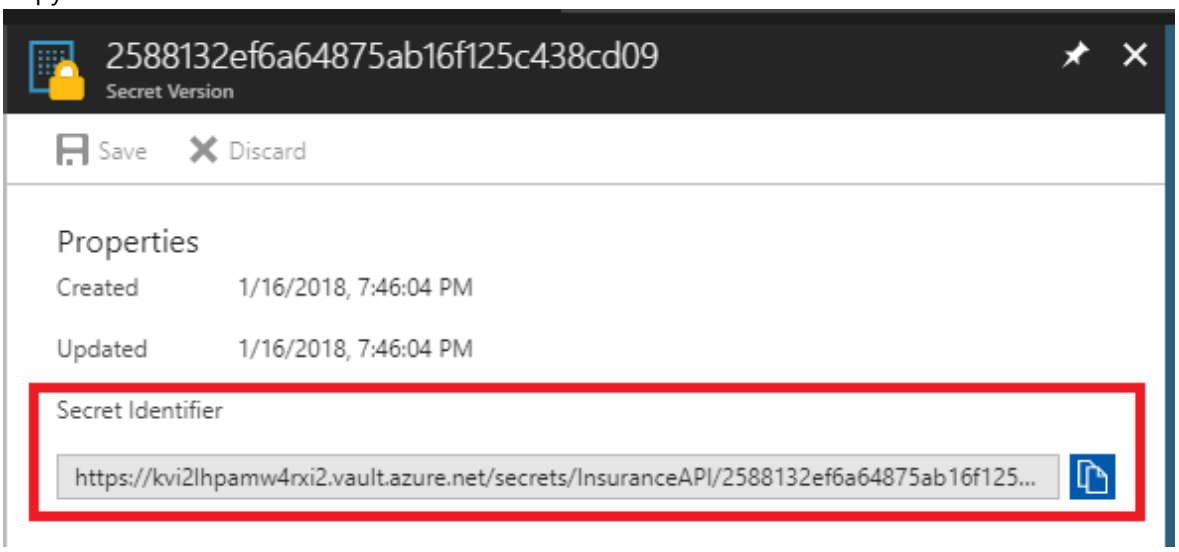
1. From the extracted GitHub directory, open the **\WebApp\InsuranceAPI_KeyVault\InsuranceAPI.sln** solution.
2. Switch to your Azure Portal.
3. Select **Key Vaults**, then select your Azure Key Vault.



4. Select **Secrets**, then select **+Add.**
5. For the **Upload Options**, select **Manual.**
6. For the **Name**, enter **InsuranceAPI.**
7. For the **Value,** copy the connection string information from the InsuranceAPI solution web.config file in Exercise 2.
8. Select **Create.**
9. Select **Secrets.**
10. Select **InsuranceAPI.**
11. Select the current version.

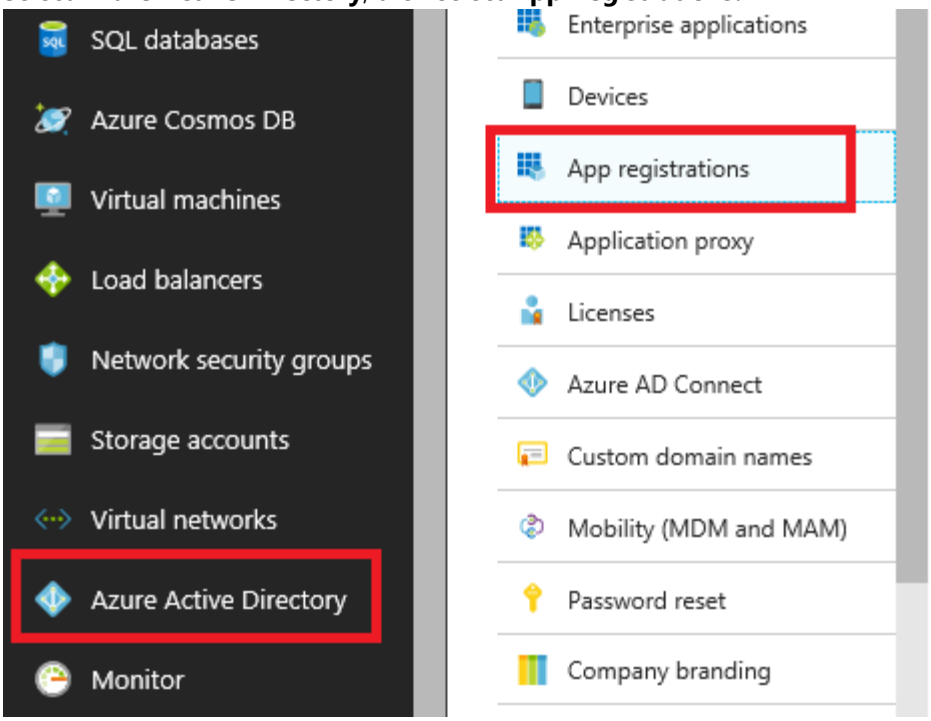


12. Copy and record the secret identifier URL for later use:



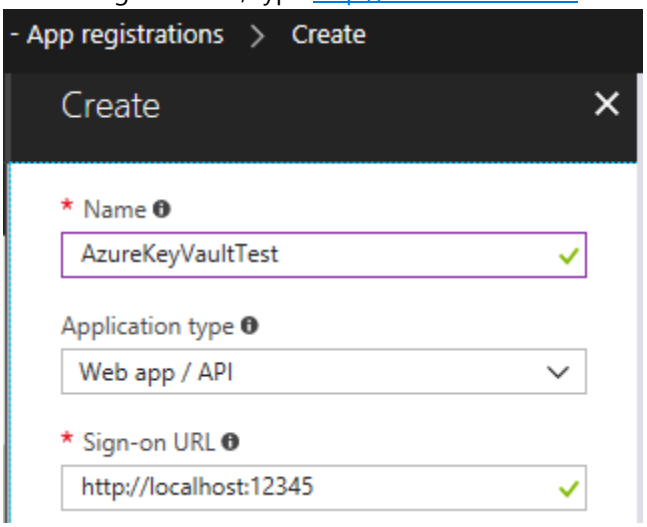
Task 2: Create an Azure Active Directory Application

1. Select **Azure Active Directory**, then select **App Registrations.**

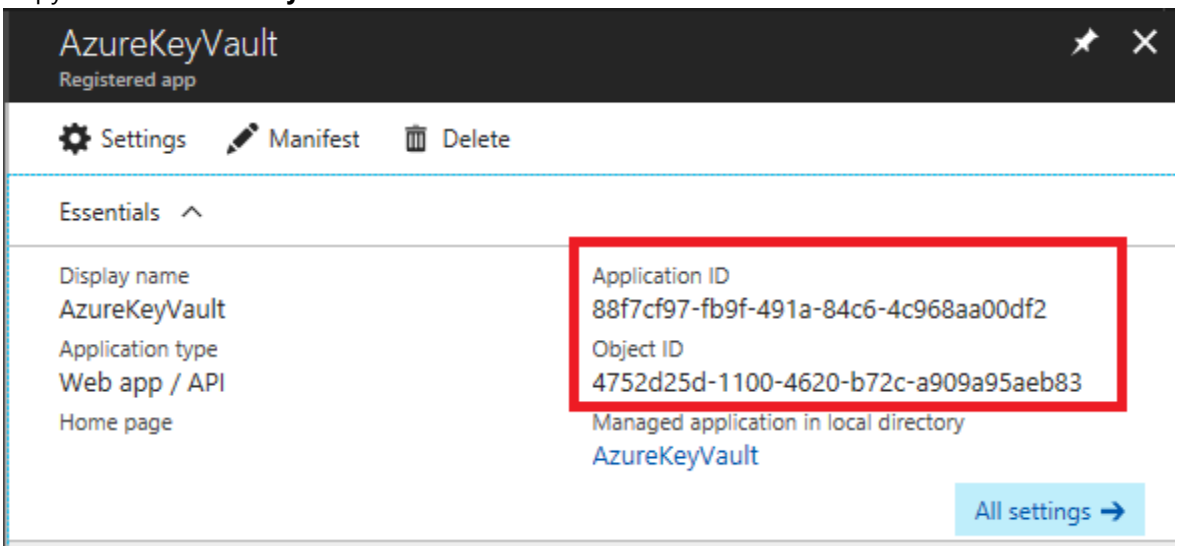


2. Select **+New application registration.**
3. For the name, type **AzureKeyVaultTest.**

4. For the Sign-on URL, type http://localhost:12345.



5. Select **Create.**
6. Select the new **AzureKeyVaultTest** application.
7. Copy and record the **Application ID** for later use.
8. Copy and record the **Object ID** for later use.

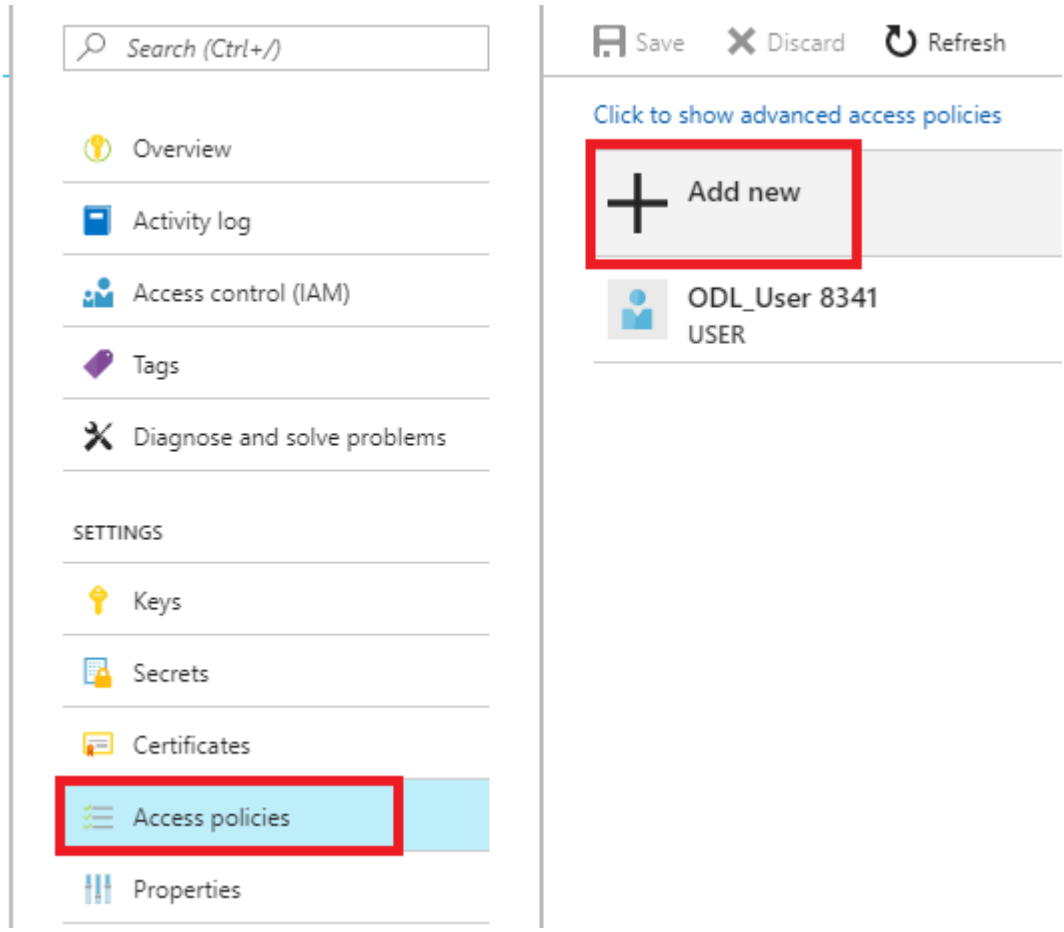


9. Select **Settings.**
10. Select **Keys.**
11. For the description, enter **InsuranceAPI.**
12. For the Expires, select **In 1 year.**
13. Select **Save.**
14. Copy and record the key value for later use.

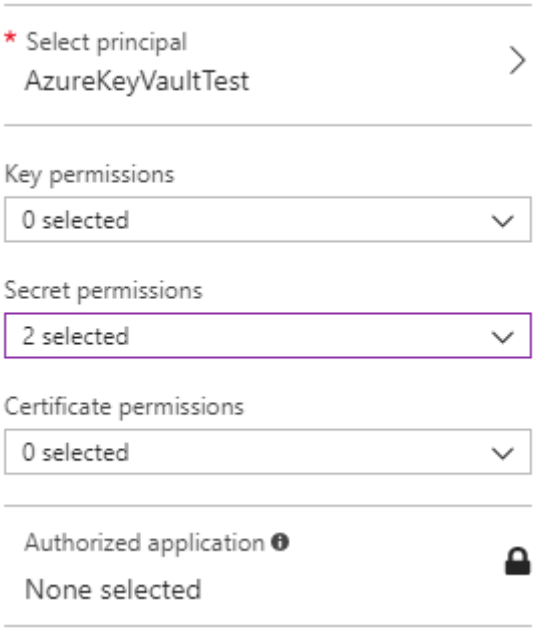
Task 3: Assign Azure Active Directory Application permissions

1. Switch back to Azure Portal and select your Azure Key Vault.
2. Select **Access Policies.**

3. Select **+Add New.**



4. Select **Select prinicipal**, type **AzureKeyVaultTest.**
5. Select the application service principal, select **Select.**
6. Select the **Secret permissions** drop-down, check the **Get** and **List** permissions.



7. Select **OK.**
8. Select **Save.**

Task 4: Install/verify Nuget Package

1. Switch to **Visual Studio.**
2. In the menu, seleect **View->Other Windows->Package Manager Console.**
3. In the new window that opens, run the following commands
   NOTE: These already exist in the project but are provided as a reference.
   a. `Install-Package Microsoft.IdentityModel.Clients.ActiveDirectory -Version 2.16.204221202`
   b. `Install-Package Microsoft.Azure.KeyVault`
4. From **Solution Explorer**, double-click the **web.config** file to open it.
   Notice the **appSettings** section has some token values:

```
14    <add key="ClientValidationEnabled" value="true" />
15    <add key="UnobtrusiveJavaScriptEnabled" value="true" />
16    <!-- ClientId and ClientSecret refer to the web application registration with
17    <add key="ClientId" value="Clientid" />
18    <add key="ClientSecret" value="clientsecret" />
19    <!-- SecretUri is the URI for the secret in Azure Key Vault -->
20    <add key="SecretUri" value="secreturi" />
21
22  </appSettings>
23  <system.web>
```

5. Replace the **ClientId** and **ClientSecret** with the values from Task 2.
6. Replace the **SecretUri** with the Azure Key Vault secret key Uri from Task 1.
7. Save the file.

Task 5: Test the Solution

1. Open the **web.config**, and delete the **connectionString** from the file at line 78.
2. Open the **global.asax.cs** file, and place a break point at line 28.

   NOTE: This code makes a call to get an accessToken as the application you set up above, then make a call to the Azure Key Vault using that accessToken.

3. Run the solution, and press **F5.**
   You should see that you execute a call to Azure Key Vault and get back the secret (which in this case is the connection string to the Azure Database).

```
var kv = new KeyVaultClient(new KeyVaultClient.AuthenticationCallback(Util.GetToken));
var sec = await kv.GetSecretAsync(WebConfigurationManager.AppSettings["SecretUri"]);
Util.EncryptSecret = sec.Value;  ≤633ms elapsed
                                 sec.Value  "data source=azuresecurity-abc.database.windows.net;initial catalog=Insurance;persist s
```

4. Press **F5**, and navigate to http://localhost:portno/api/Users, you should see your data displayed!

Exercise 4: Securing the network

Duration: 45 minutes

Synopsis: In this exercise, attendees will utilize Network Security Groups to ensure that virtual machines are segregated from other Azure hosted services and then explore the usage of the Network Packet Capture feature of Azure to actively monitor traffic between networks.

Task 1: Test network security group rules #1

1. In the Azure Portal, select **Virtual Machines.**
2. Select **paw-1**, then select **Connect** (you may have to request JIT access).

   NOTE: Default username is **wsadmin** with **p@ssword1rocks** as password.

3. In the **PAW-1** virtual machine, open **PowerShell ISE as administrator.**
4. Select File->Open, browse to the extracted GitHub directory and open the **\Scripts \PortScanner.ps1.**
5. Review the script. It does the following:
   a. Installs NotePad++
   b. Adds hosts entries for DNS

      NOTE: When using multiple virtual networks, you must setup a DNS server in the Azure tenant

   c. Executes port scans
6. Run the script, and press **F5.** You should see the following:
   a. Port scan for port 3389 (RDP) to **DB-1** and **WEB-1** is unsuccessful from the **PAW-1** machine.

```
Server   : web-1
Port     : 3389
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out

Server   : db-1
Port     : 3389
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out
```

   b. Port scan for port 1433 (SQL) to **DB-1** and **WEB-1** is unsuccessful from the **PAW-1** machine.

```
Server   : web-1
Port     : 1433
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out

Server   : db-1
Port     : 1433
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out
```

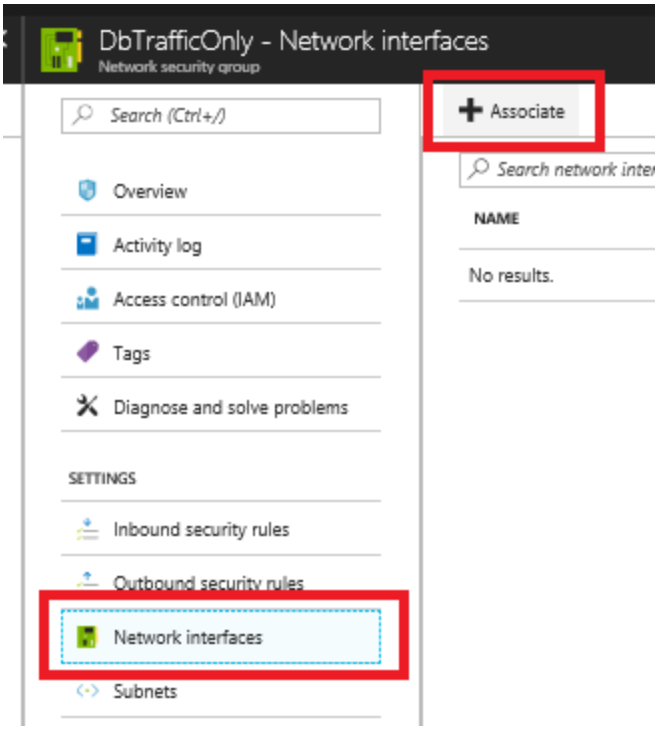

c. Port scan for port 80 (HTTP) to **DB-1** and **WEB-1** is successful from the **PAW-1** machine.

```
Server   : web-1
Port     : 80
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out

Server   : db-1
Port     : 80
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out
```

Task 2: Configure network security groups

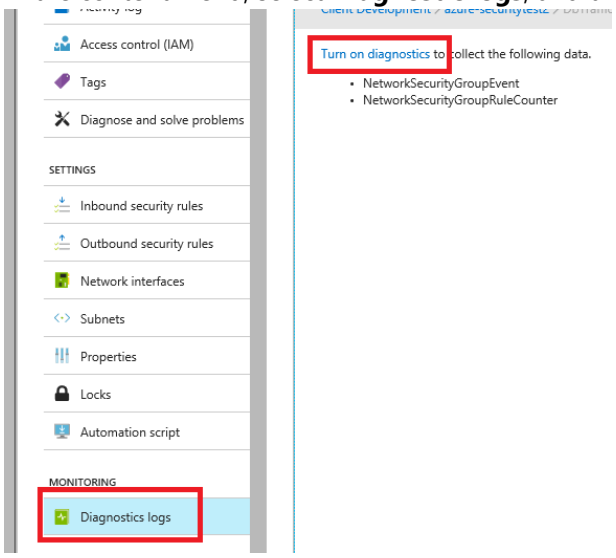
1. Switch to the Azure Portal.
2. Configure the database server to only allow SQL Connections from the web server.
   a. Select **Network Security Groups.**
   b. Select **DbTrafficOnly.**
   c. Select **Inbound Security Rules.**
   d. Select **+Add.**
   e. For the **Source**, select **IP Addresses.**
   f. For the **Source IP address**, enter **10.2.0.4**
   g. For the **Destination port range**, enter **1433**
   h. For the **priority**, enter **100**
   i. Select **OK.**
   j. Select **Network Interfaces**, then select **+Associate.**



   k. Select the **db-1-nic** network interface card.
3. Configure the web server to allow all HTTP and HTTPS connections.
   a. Select **Network Security Groups**
   b. Select **WebTrafficOnly**

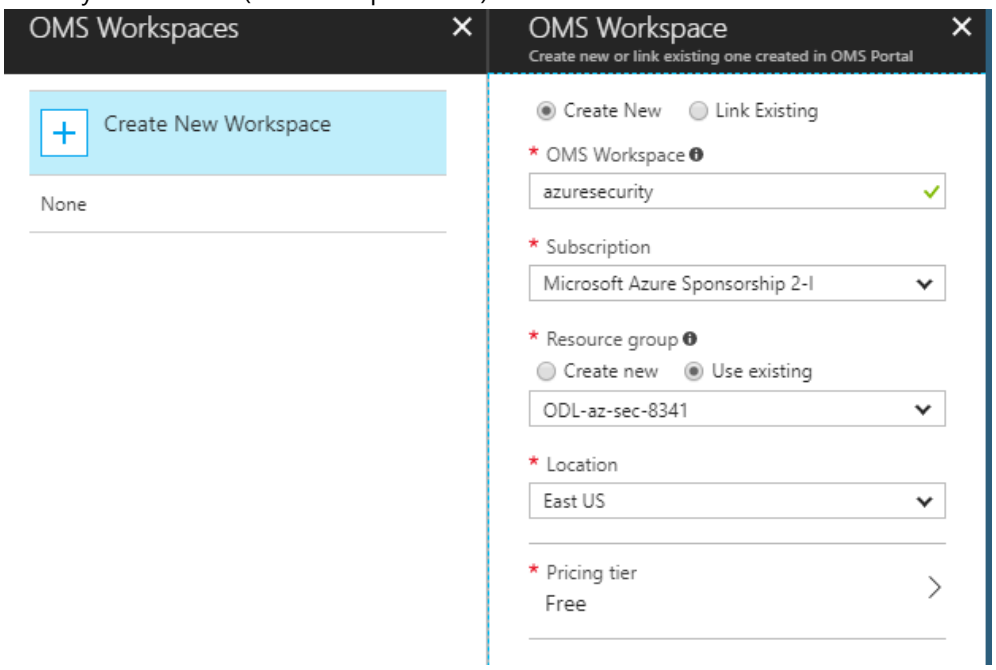
c. Select **Inbound Security Rules**
d. Select **+Add.**
e. For the **Destination port range**, enter **80,443**
f. For the **priority**, enter **100**
g. Change the name to **Port_80_443**
h. Select **OK**
i. Select **Network Interfaces**, then click **+Associate.**
j. Select the **web-1-nic** network interface card.

4. Configure both the database and web server to only allow RDP connections from the PAW machine.
   a. Select **Network Security Groups.** For both the **DbTrafficOnly** and **WebTrafficOnly**, do the following:
      i. Select **Inbound Security Rules.**
      ii. Select **+Add.**
      iii. For the **Source**, select **IP Addresses.**
      iv. For the **Source IP address**, enter **10.0.0.4**
      v. For the **Destination port range**, enter **3389**
      vi. For the **priority**, enter **101**
      vii. Select **OK.**
5. Configure all NSGs to have Diagnostic logs enabled.
   a. Select **Network security groups.** For each NSG, do the following:
      i. In the content menu, select **Diagnostic logs**, and then select **Turn on diagnostics.**



      ii. For the name, enter the NSG name and then add **Logging** to the end.
      iii. Check the **Send to Log Analytics** checkbox.
      iv. Select **Create New Workspace.** For the name enter **azuresecurity**
      v. Select your resource group.

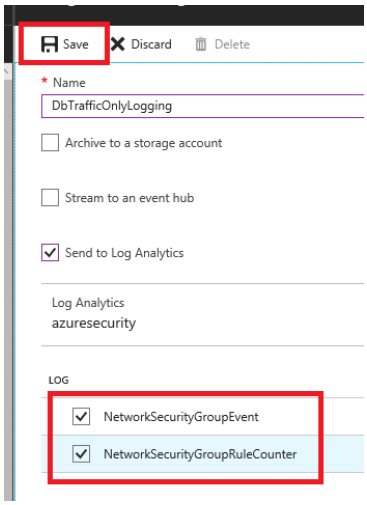
vi. Select your location (East US is preferred).



vii. Select **OK**, wait for the OMS workspace to be created.

viii. Select both LOG checkboxes.

ix. Select **Save.**



Task 3: Test network security group rules #2

1. Switch back to the **PAW-1** virtual machine.
2. Run the script, press **F5**, and you should see the following:

a. Port scan for port 3389 (RDP) to **DB-1** and **WEB-1** is successful from the **PAW-1** machine.

```
Server   : web-1
Port     : 3389
TypePort : TCP
Open     : True
Notes    :

Server   : db-1
Port     : 3389
TypePort : TCP
Open     : True
Notes    :
```

b. Port scan for port 1433 (SQL) to **DB-1** is successful, and **WEB-1** is unsuccessful from the **PAW-1** machine.

NOTE: You may need to disable the windows firewall on the DB-1 server to achieve this result.

```
Server   : web-1
Port     : 1433
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out

Server   : db-1
Port     : 1433
TypePort : TCP
Open     : True
Notes    :
```

c. If IIS has been setup on WEB-1, the port scan for port 80 (HTTP) to **DB-1** is unsuccessful and **WEB-1** is successful from the **PAW-1** machine.

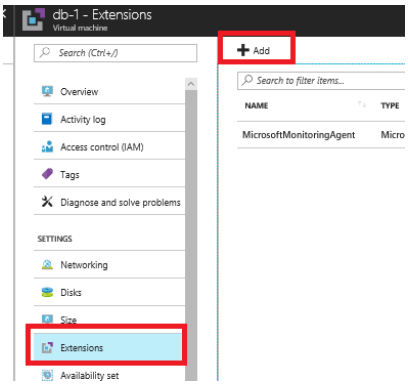
```
Server   : web-1
Port     : 80
TypePort : TCP
Open     : True
Notes    :

Server   : db-1
Port     : 80
TypePort : TCP
Open     : False
Notes    : Connection to Port Timed Out
```

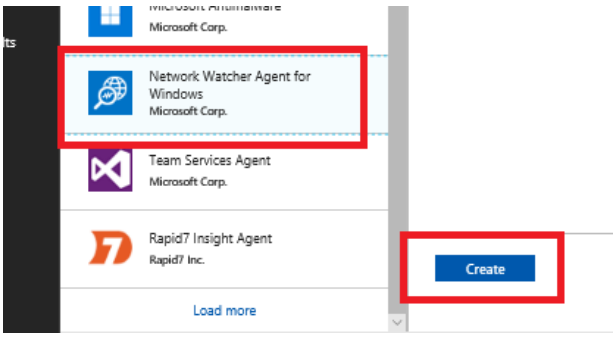
Task 4: Install network watcher VM extension

1. Switch to the Azure Portal.
2. Select **Virtual Machines.**
3. Select **db-1.**

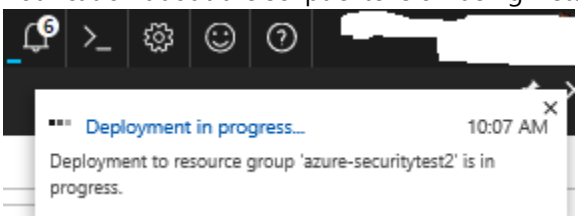
4. Select **Extensions**, then select **+Add.**



5. Browse to the **Network Watcher Agent for Windows**, and select it.
6. Select **Create.**

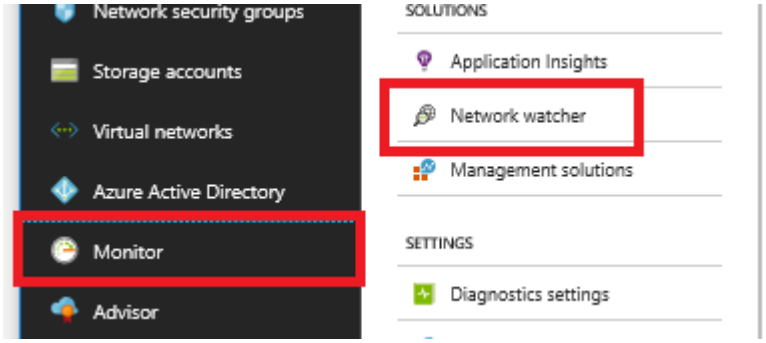


7. In the next **Install extension** dialog window (note that it could be blank) select **OK.** You should see a toast notification about the script extension being installed into the Virtual Machine.



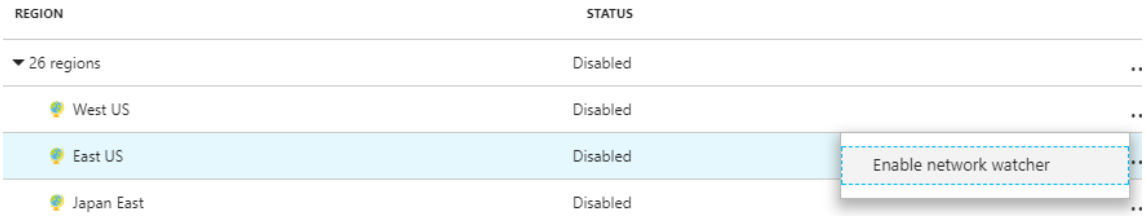
Task 5: Setup network packet capture

1. In the main Azure Portal menu, select **Monitor.**
2. In the context menu, select **Network Watcher.**

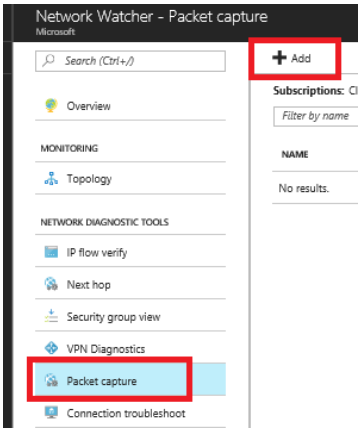


3. Select the **Overview** link.
4. Expand the subscription region item.

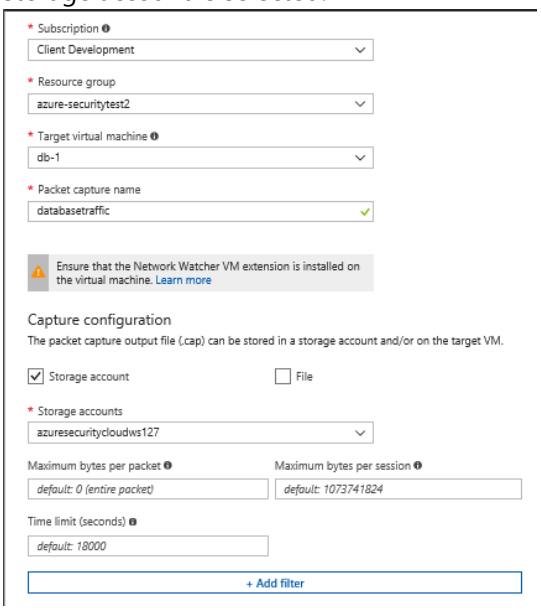
5. For the **East US** region, select the ellipses, then select **Enable Network Watcher.**



6. In the new context menu, select **Packet capture.**
7. Select **+Add.**



8. For the target virtual machine, ensure that **db-1** is selected.
9. For the capture name, enter **databasetraffic**
10. Notice the ability to save the capture file to the local machine or an Azure storage account. Ensure that the storage account is selected.



11. Select **OK.**

Task 6: Execute a port scan

1. Switch your Remote Desktop connection to the **PAW-1** virtual machine.
2. Uncomment the last line of the script, and press **F5.**
   You should see the basic ports scanned, and then a port scan from 80 to 443. This will generate many security center logs for the Network Security Group which will be used in the Custom Alert in the next exercise.

Exercise 5: Creating security log alerts

Duration: 20 minutes

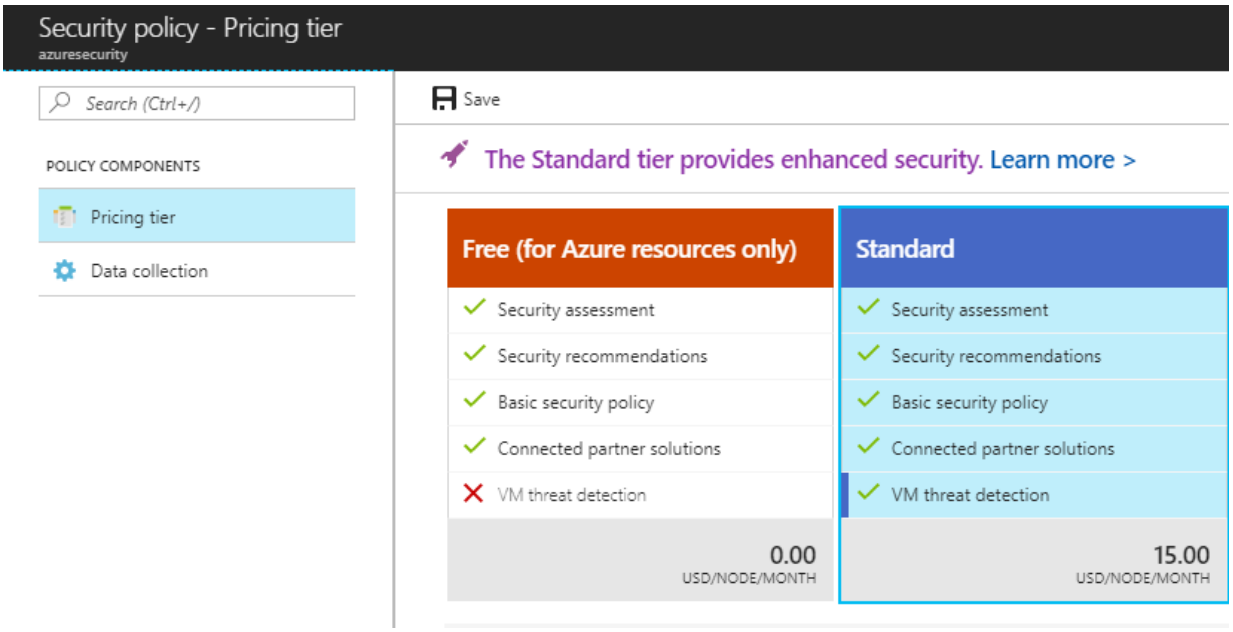
Synopsis: In this exercise, you will create custom security alerts using the Azure Security Center. The alert will generate the execution of a RunBook using Logic Apps.

Task 1: Create a custom alert

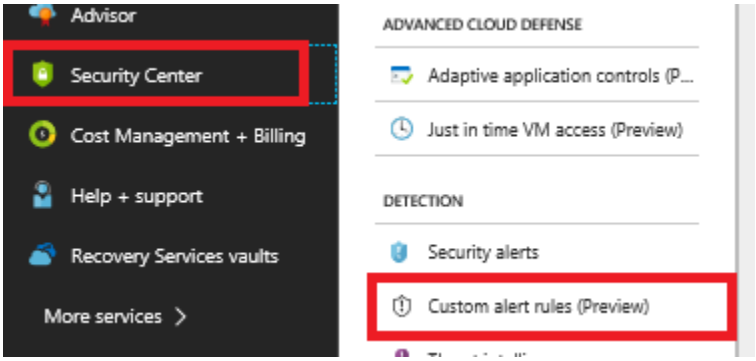
1. Open the Azure Portal.
2. Select **Security Center,** then select **Custom alert rules.**

   NOTE: If you see **Try custom alert rules now**, do the following:

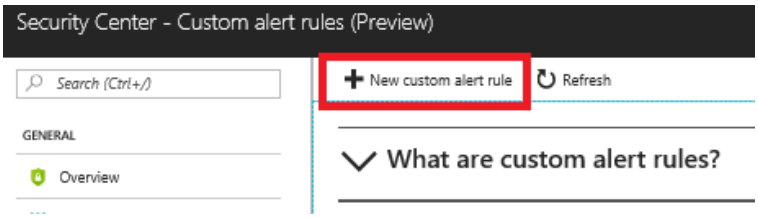
   a. Select **Security Policy.**
   b. Select the OMS workspace called **azuresecurity.**
   c. Select the **Standard** tier.



   d. Select **Save.**
   e. Select **Custom Alert Rules.**



3. Select the **+New custom alert rule** link.



4. For the name, enter **PortScans**
5. For the description, enter **A custom rule to detect port scans**
6. In the Search Query text box, type **search * | where Type != 'AzureMetrics' and OperationName == 'NetworkSecurityGroupCounters' and type_s == 'block' and direction_s == 'In' and Resource == 'WEBTRAFFICONLY'**

   NOTE: If you were quick going through the labs, then you may not have log data in the OMS workspace just yet. You may need to wait 15-30 minutes before a query will execute.

7. For the period, select **Over the last 1 hours.**
8. For the evaluation, select **Every 5 minutes.**

   NOTE: This is so that our lab will run quickly and may not be appropriate for real world.

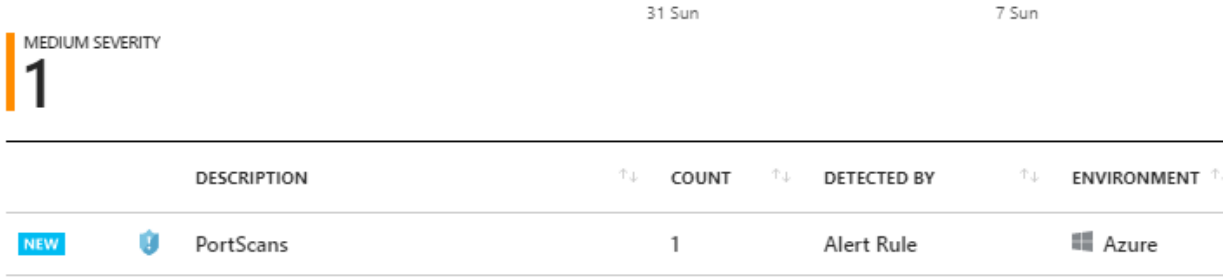
9. For the threshold, enter **50**

10. For the suppress alerts, enter **60**

11. Click **OK**

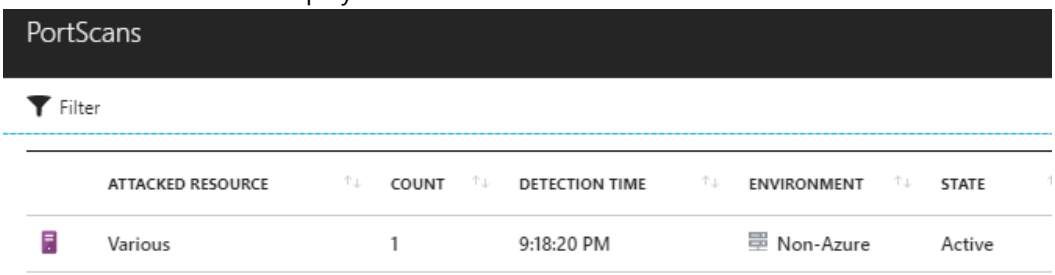
Task 2: Investigate a custom alert

1. In the main menu, select **Security Center.**
2. Select **Security Alerts.**
3. Select the new **PortScans** alert.



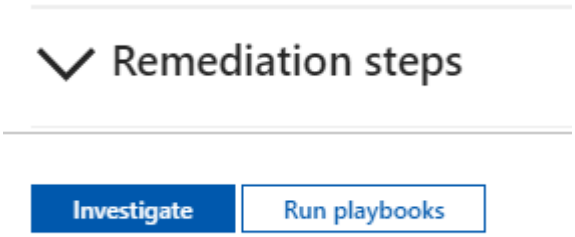
NOTE: It may take 15-20 minutes for the alert to fire. You can continue to execute the port scan script to cause log events or you can lower the threshold for the custom alert.

4. Select one of the rows displayed.

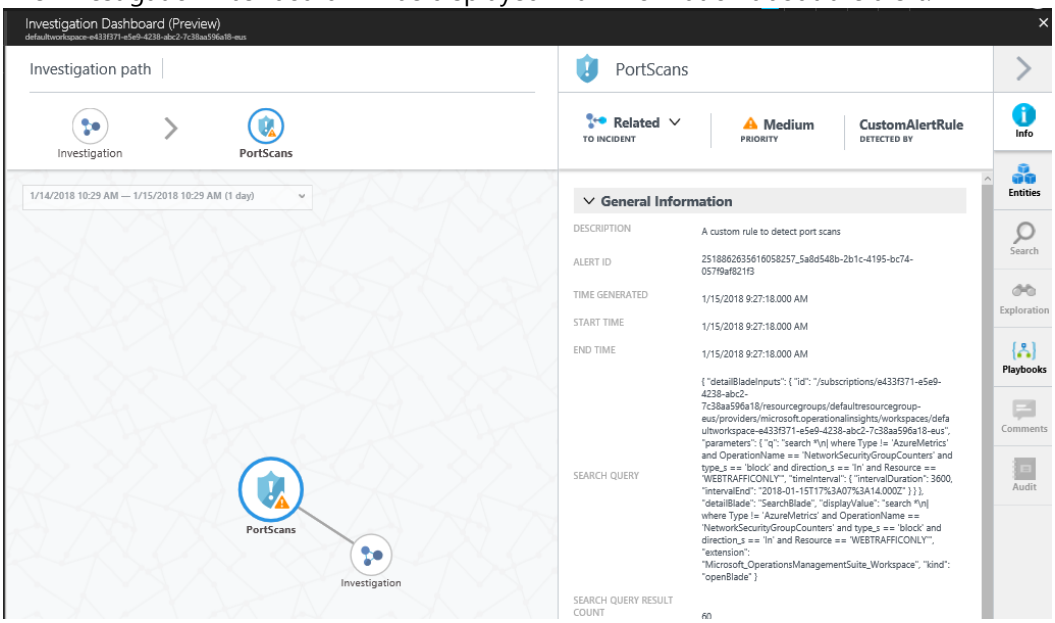


5. Select **Investigate.**

NOTE: The links may not yet be clickable, if so, wait 5-10 minutes.

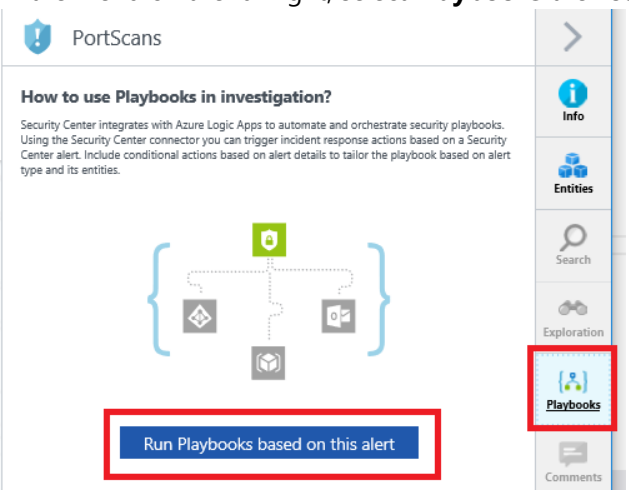


The Investigation Dashboard will be displayed with information about the alert.

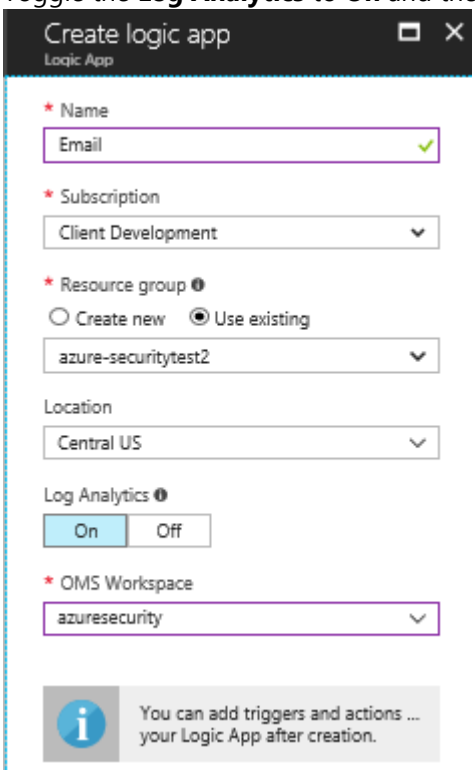


Task 3: Create and run a playbook

1. In the menu on the far right, select **Playbooks** then select **Run Playbooks based on this alert.**

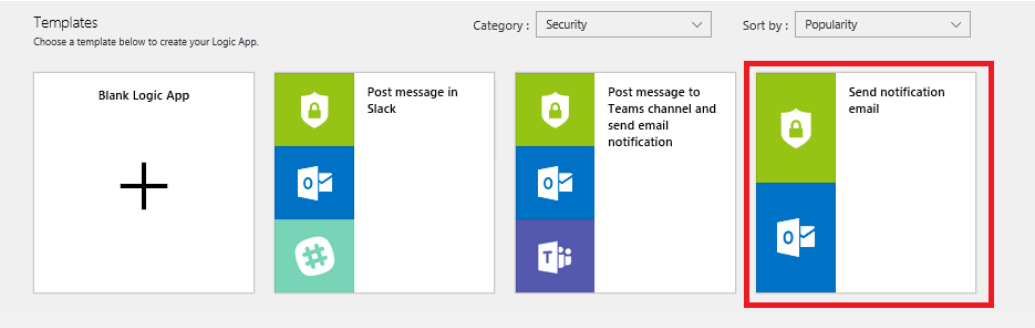


2. In the new window, select **Add Playbook.** The **Create logic app** dialog will display.
3. For the name, enter **Email**
4. Select your existing resource group
5. Toggle the **Log Analytics** to **On** and then select your **azuresecurity** OMS workspace.

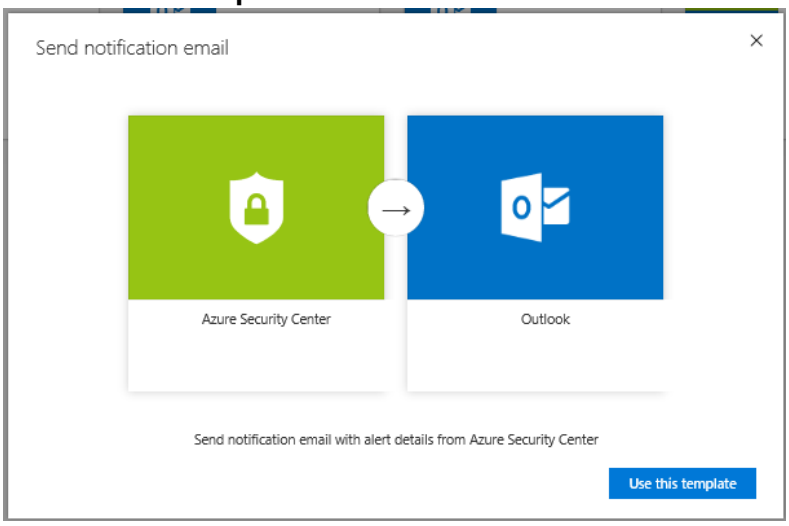


6. Select **Create**, and the Logic Apps designer will load.

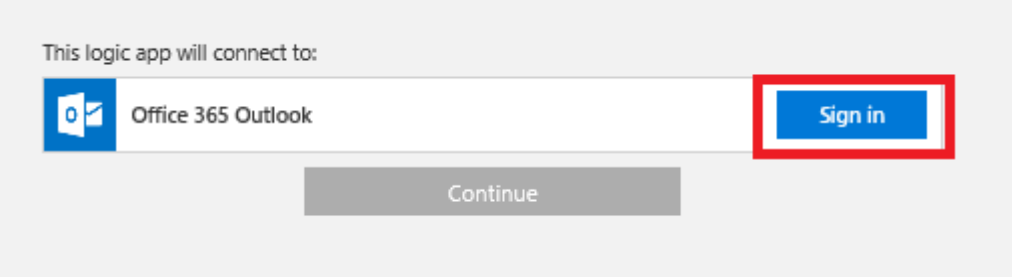
7. Select the **Send notification email** template.



8. Select **Use this template.**



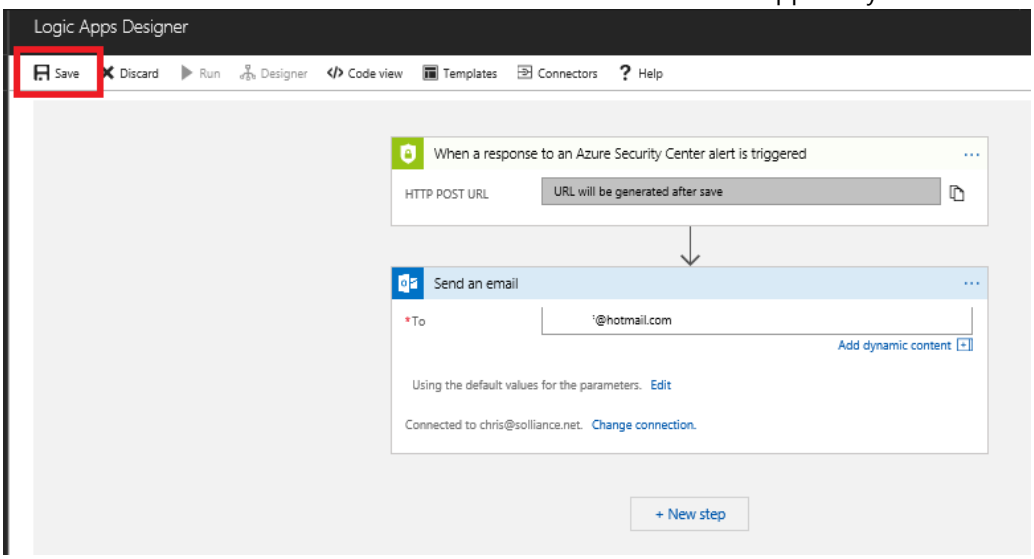
9. Select **Sign In**, and then type your Azure/O365 credentials.



10. Select **Continue.**
11. For the email address, enter your email.

    NOTE: This would need to be a valid Office 365 account.

12. Select **Save**. You now have an email alert action based on PowerApps for your custom security alert.



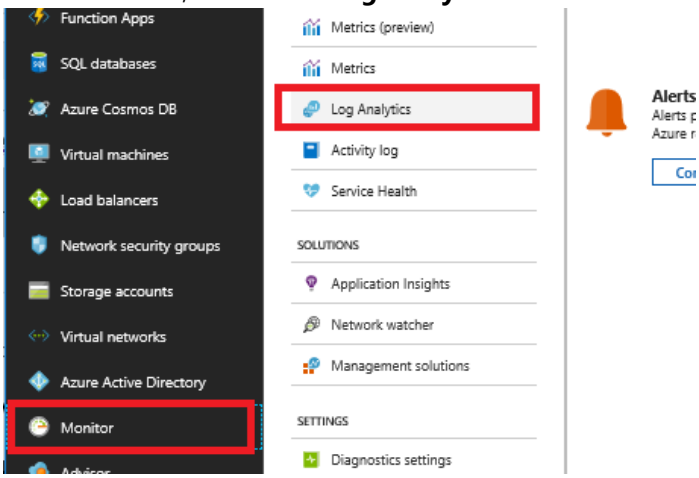
Exercise 6: Creating Compliance Reports with Power BI

Duration: 20 minutes

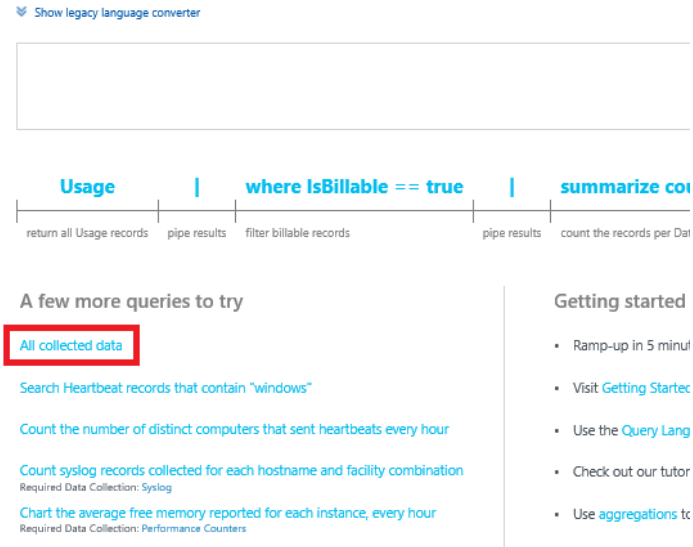
Synopsis: In this exercise, attendees will learn to utilize the Log Analytics feature of Azure to create Power BI Reports.

Task 1: Export a Power Query formula from Log Analytics

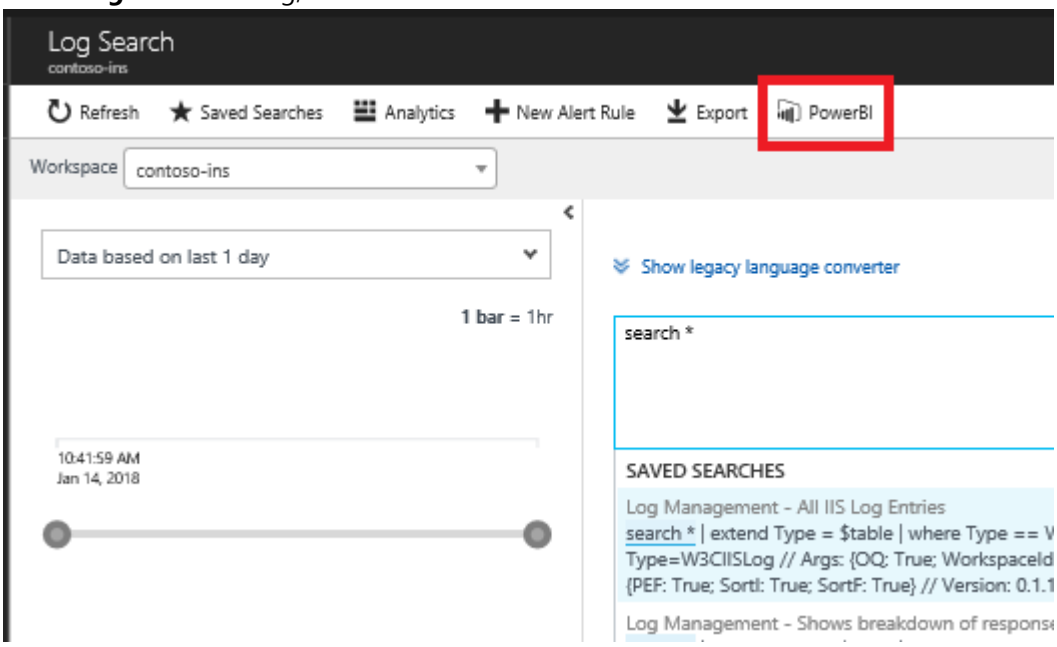
1. Select **Monitor**, then select **Log Analytics.**



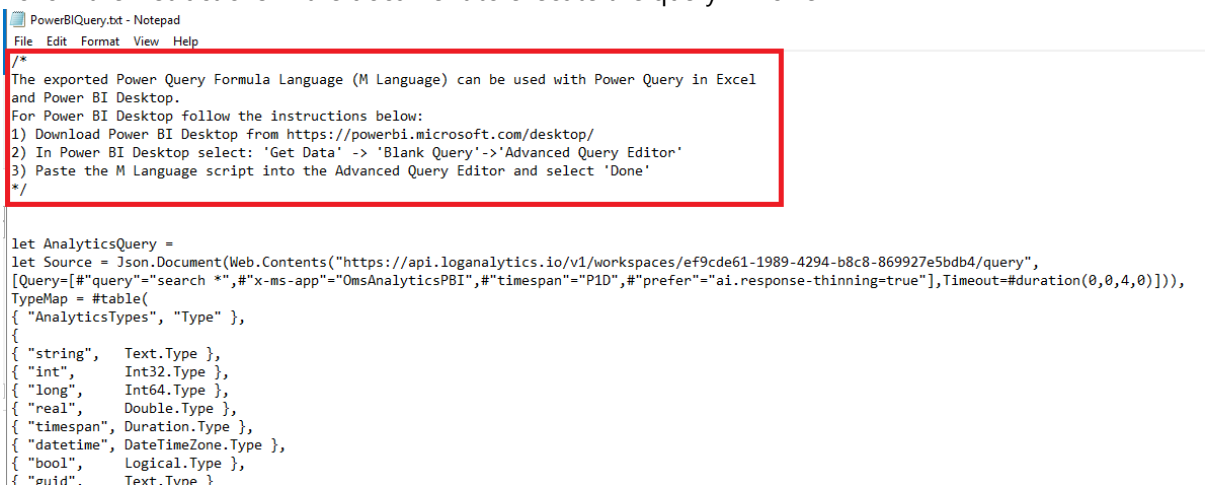
2. Select **All collected data.**



3. In the **Log Search** dialog, select the **Power BI** link.



4. Select **Open**, a text document with the Power Query M Language will be displayed.
5. Follow the instructions in the document to execute the query in Power BI



6. Close **Power BI.**

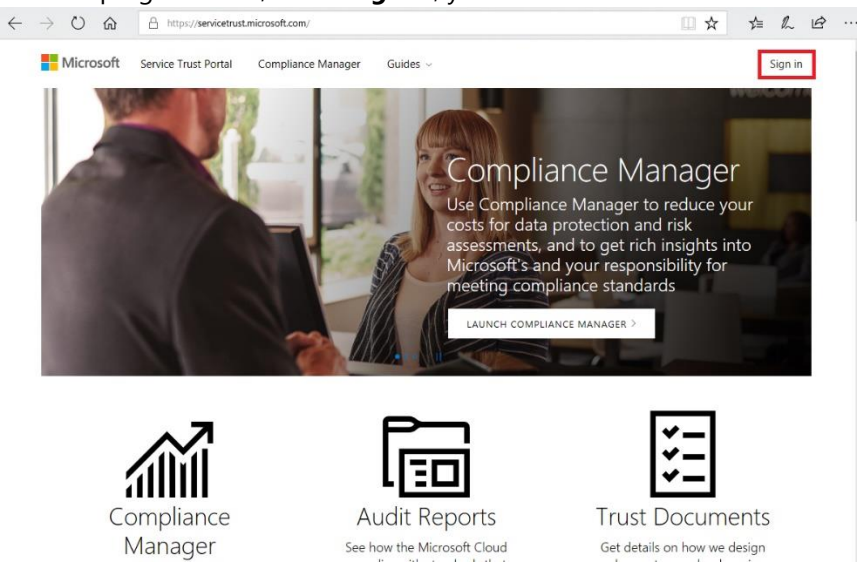
Exercise 7: Using Compliance Manager

Duration: 15 minutes

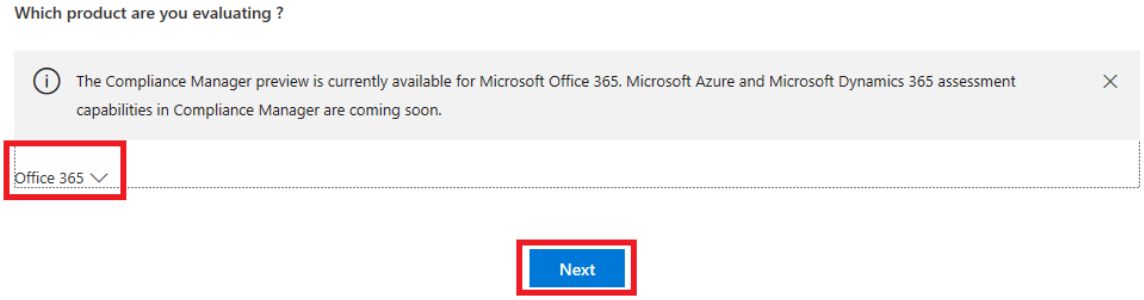
Synopsis: In this exercise, attendees will learn to navigate the Compliance Manager to explore the various documents that describe the compliance and trust.

Task 1: Use Compliance Manager for Azure

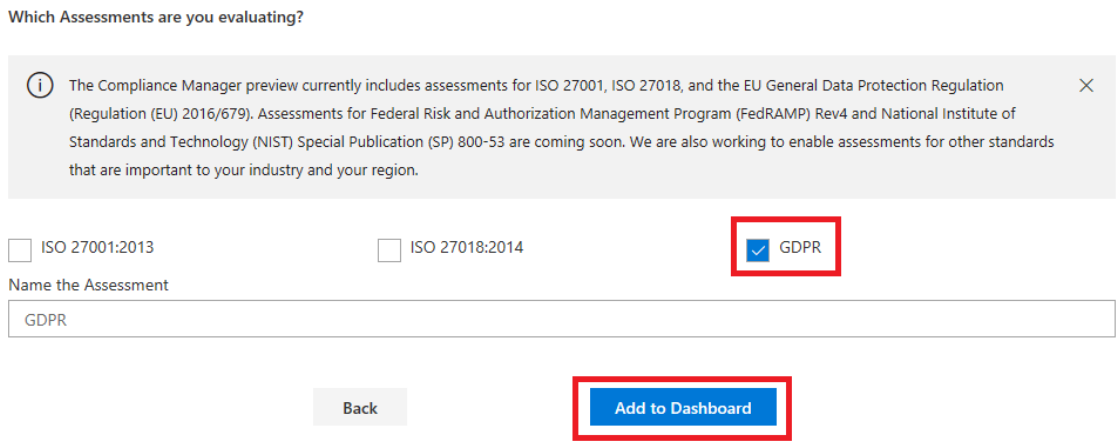
1. In a browser, go to the Service Trust/Compliance Manager portal (https://servicetrust.microsoft.com).
2. In the top right corner, select **Sign in**, you will be redirected to the Azure AD login page.



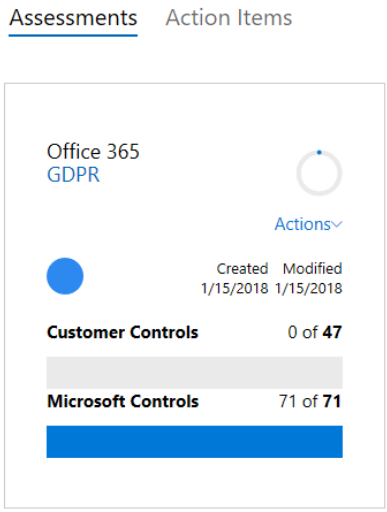
3. Select or sign in with your Azure AD\Office 365 credentials.
4. Select the **LAUNCH COMPLIANCE MANAGER** link.
5. Select on the **+Add Assessment** link, you may notice that only **Office 365** is available (Azure will be available in mid-2018).
6. Select **Next.**



7. You will be presented with various assessments that you can create. Check **GDPR**.



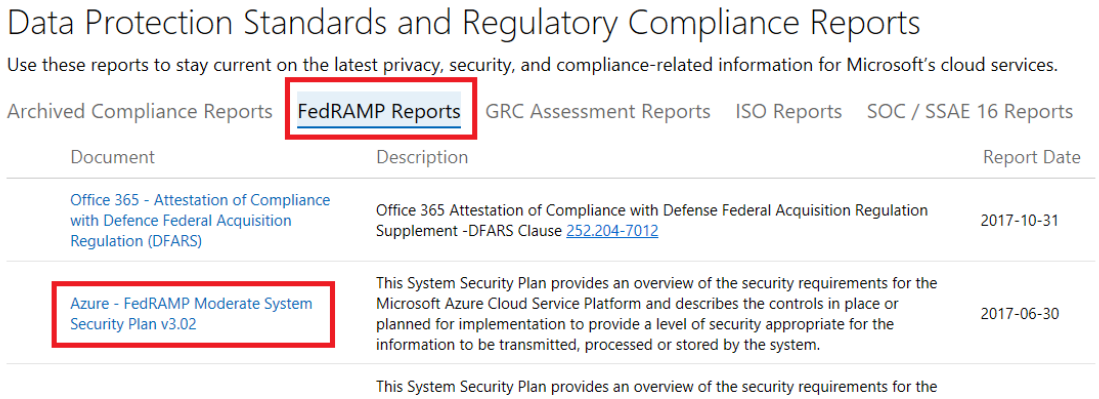
8. Click **Add to Dashboard.** You will now see a new assessment for Office 365 and GDPR.



9. Scroll to the top of the web page and select **Service Trust Portal**, then scroll to the bottom of the page. Notice the two other main sections of the trust center called: **Audit Reports** and **Trust Documents.**
10. Select **Audit Reports.**

11. Notice the various tabs that you can select from, click **FedRAMP**

12. These are all the FedRAMP reports sorted by date that have been preformed and publicly posted for Azure customer review. Select the item displayed and briefly review the document.



13. Switch back to the Service Trust Portal web page. In the top navigation, select **Service Trust Portal**, and then select **Trust Documents** at the bottom of the page.
14. These are all the various guides and white papers that describe how Azure achieves various levels of compliance

After the hands-on lab

Duration: 10 minutes

In this exercise, attendees will deprovision any Azure resources that were created in support of the lab.

Task 1: Delete resource group

1. Using the Azure portal, navigate to the Resource group you used throughout this hands-on lab by selecting **Resource groups** in the left menu.
2. Search for the name of your research group, and select it from the list.
3. Select **Delete** in the command bar, and confirm the deletion by re-typing the Resource group name and selecting **Delete**.

Task 2: Delete lab environment (optional)

1. If you are using a hosted platform, make sure you shut it down or delete it.

You should follow all steps provided *after* attending the Hands-on lab.

Appendix A

Appendix A outlines the detailed steps involved in manually creating the resources provisioned by the Lab ARM template. The ARM template creates virtual networks, virtual machine, storage accounts, and a SQL Azure database.

Task 1: Create storage account

- Create a single storage account for VMs and other resource to utilize.

Task 2: Create virtual networks

- Create the following Virtual Networks:
    - dbVnet – subnet of 10.1.0.0
    - mainVnet– subnet of 10.0.0.0
    - webVnet– subnet of 10.2.0.0
- Ensure that virtual network peerings exist.
    - Db<->Main
    - Web<->Main

Task 3: Create virtual machines

- Create the following Virtual Machines:
    - PAW-1 – A2 instance, Windows Server
    - DB-1 – A2 instance, Windows Server with SQL Server – be sure to open the windows firewall for port 1433 traffic
    - WEB-1– A2 instance, Windows Server – Install IIS

Task 4: Create network security groups

- Create the following NSGs
    - DbTrafficOnly – assigned to the DB-1 nic
    - Paw-1-nsg – assigned to the PAW-1 nic
    - WebTrafficOnly – assigned to the WEB-1 nic

Task 5: Azure SQL server

- Create an instance of Azure SQL Server.

Task 6: Create an Azure key vault

- Create an instance of azure key vault.