

SQL Moderation Hack Database Migration Lab Step-by-step

V2.4

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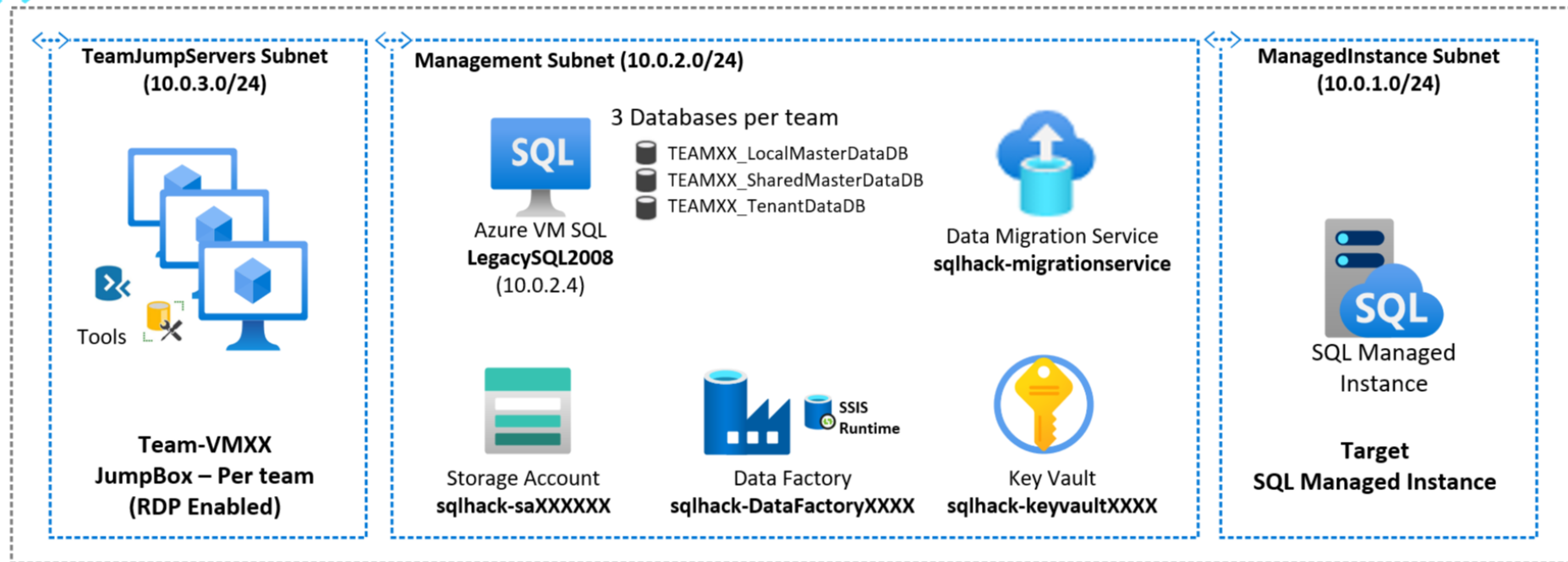
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Migration architecture and Azure components

Virtual Network -- SQLHACK-SHARED-VNET



SQLHACK-SHARED-VNET

Single Virtual Network containing all workshop resources

TeamJumpServers Subnet

Each team is assigned a Win10 VM that mimics their company desktop

Management Subnet

Several machines and services are already deployed within a dedicated subnet within the Virtual Network

ManagedInstance Subnet

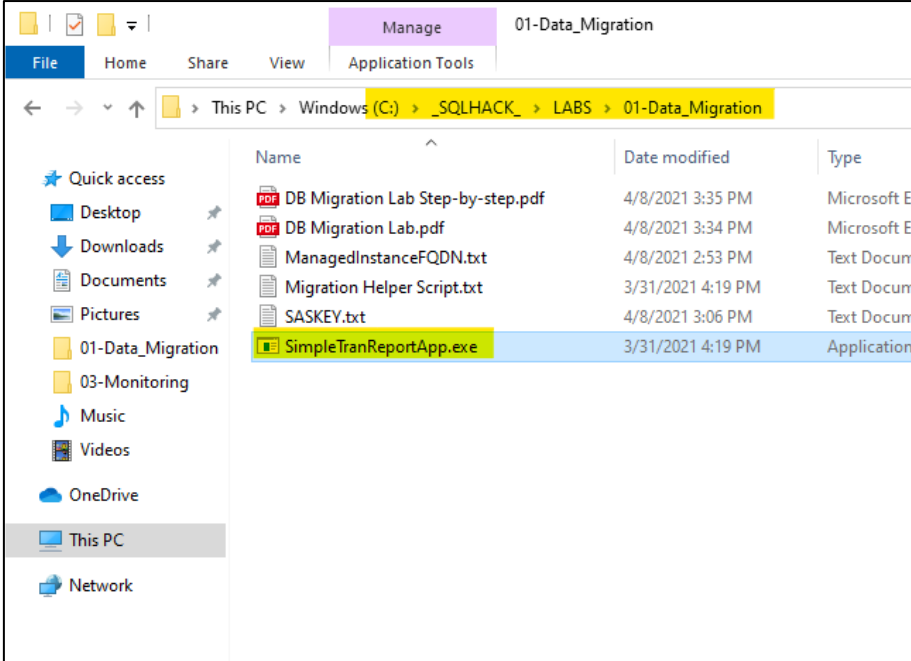
The Azure SQL Managed Instance has been deployed into a dedicated Subnet

Generic Migration Content

Narrative	Notes
<i>Notes for outside of the workshop:</i> <i>Familiarise yourself with Microsoft migration tools and the Azure Database Migration Guide</i>	Azure Database Migration Guide: https://www.microsoft.com/en-us/download/default.aspx DMA & download link: https://docs.microsoft.com/en-us/sql/dma/dma-overview?view=sql-server-ver15 Microsoft Migration Portal: https://datamigration.microsoft.com/

1. Investigate the 'Online Transaction Monitor' legacy application

In this section we'll connect the legacy Online Transaction Monitor application to the legacy SQL2008 databases and see it running.

Narrative	Screenshot	Notes																					
<p>We will set the sample application running to demonstrate how Azure Database Migration Services can be used to perform a migration of a database.</p> <p>RDP onto the Win10 management VM using the details from the "DB Migration Lab and Parameters.pdf"</p> <p>Run the 'SimpleTranReportApp' app which can be found in: C:_SQLHACK_\LABS\01-Data_Migration</p> <p>Or</p> <p>In Windows Explorer search for 'SimpleTranReportApp.exe'</p>	 <p>The screenshot shows a Windows Explorer window titled '01-Data_Migration'. The address bar shows the path 'This PC > Windows (C:) > _SQLHACK_ > LABS > 01-Data_Migration'. The left sidebar shows 'Quick access' with links to Desktop, Downloads, Documents, Pictures, 01-Data_Migration, 03-Monitoring, Music, and Videos. The main pane shows a list of files and folders:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Date modified</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>DB Migration Lab Step-by-step.pdf</td> <td>4/8/2021 3:35 PM</td> <td>Microsoft E</td> </tr> <tr> <td>DB Migration Lab.pdf</td> <td>4/8/2021 3:34 PM</td> <td>Microsoft E</td> </tr> <tr> <td>ManagedInstanceFQDN.txt</td> <td>4/8/2021 2:53 PM</td> <td>Text Docum</td> </tr> <tr> <td>Migration Helper Script.txt</td> <td>3/31/2021 4:19 PM</td> <td>Text Docum</td> </tr> <tr> <td>SASKEY.txt</td> <td>4/8/2021 3:06 PM</td> <td>Text Docum</td> </tr> <tr> <td>SimpleTranReportApp.exe</td> <td>3/31/2021 4:19 PM</td> <td>Application</td> </tr> </tbody> </table> <p>The file 'SimpleTranReportApp.exe' is highlighted in blue.</p>	Name	Date modified	Type	DB Migration Lab Step-by-step.pdf	4/8/2021 3:35 PM	Microsoft E	DB Migration Lab.pdf	4/8/2021 3:34 PM	Microsoft E	ManagedInstanceFQDN.txt	4/8/2021 2:53 PM	Text Docum	Migration Helper Script.txt	3/31/2021 4:19 PM	Text Docum	SASKEY.txt	4/8/2021 3:06 PM	Text Docum	SimpleTranReportApp.exe	3/31/2021 4:19 PM	Application	<p>In this scenario the legacy app has lost its source code, so only exists as an executable. We are not, however, blocked from migrating to Azure.</p>
Name	Date modified	Type																					
DB Migration Lab Step-by-step.pdf	4/8/2021 3:35 PM	Microsoft E																					
DB Migration Lab.pdf	4/8/2021 3:34 PM	Microsoft E																					
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SASKEY.txt	4/8/2021 3:06 PM	Text Docum																					
SimpleTranReportApp.exe	3/31/2021 4:19 PM	Application																					

Once running, select the ‘**Settings**’ tab and enter the following parameters into the fields identified:

ServerName:
LEGACYSQL2008
Initial Catalog:
TEAMxx_TenantDataDb
Username:
TEAMxx
Password:
TEAMxx

Click the “**Change Connection String**” button to apply the connection string modifications

Use the parameters from the Appendix in the “Hands-on Lab - Data Migration” document.

The connection string will now have been set to connect to the legacy SQL host: **LEGACYSQL2008** with appropriate Team database and login details.

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Select '**App Data**' tab and click the **"Run"** button.

After a few seconds transaction will start to appear in the application.

"Pause" and **"Close"** the application for the next steps

Online Transaction Monitor (TenantID = 414)

App Data Settings

Source Database Server: Instance name: 10.1.0.5, version: 12.00.5600, db compat level: 110

Country Transaction Summary

	CountryName	NumberOfTran	MinAmount	MaxAmount
▶	France	2467	62.00	108955.00
*				

Customer with TOP 10 transactions

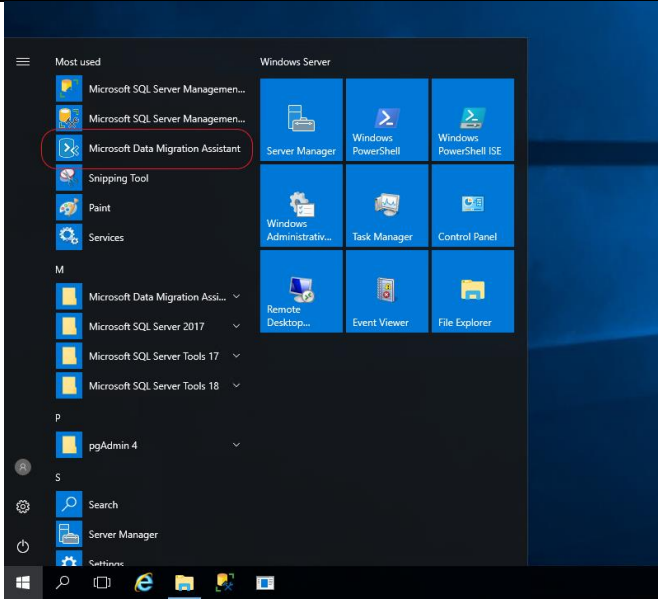
	Userid	UserName	CountryId	TranDate	TranCode	TranAmount	AmountWithTax
▶	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 7	106899.00	119726.88
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 5	105039.00	117643.68
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 7	103876.00	116341.12
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 3	102969.00	115325.28
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 8	102757.00	115087.84
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 5	100903.00	113011.36
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 7	100456.00	112510.72
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 5	99680.00	111641.6
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 7	97799.00	109534.88
	19	User 19	3	7/23/2017 3:01 ...	TR_CODE 9	96885.00	108511.2

Run Pause

The application will generate simulated transactional data. Notice how the 'Source Database Server' information at the top of the app reflects the parameters given in the previous step.

2. Assess the application databases for Azure SQL Database suitability using the Database Migration Assistant (DMA)

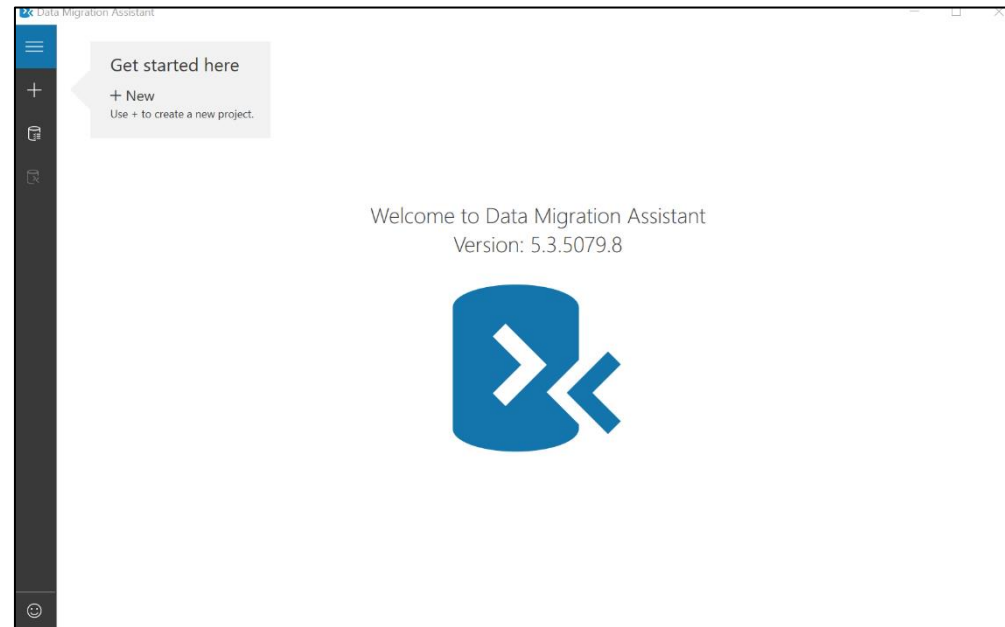
In this section we will use the Data Migration Assistant (DMA) to assess the applications database for suitability for migration to Azure Cloud.

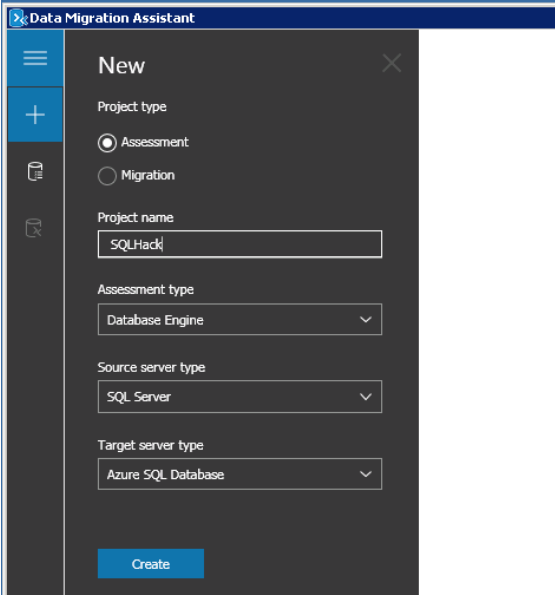
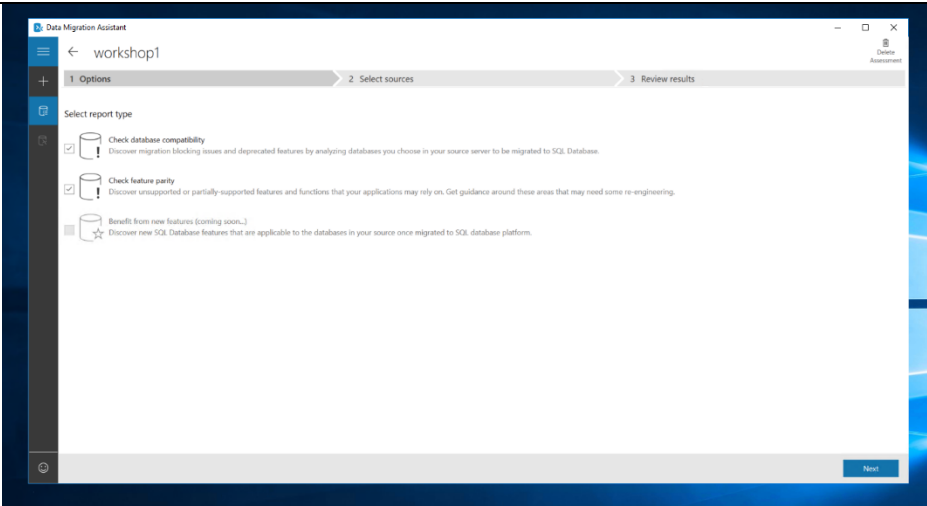
Narrative	Screenshot	Notes
<p>We need to determine the suitability of the database(s) for migration to Azure. This includes checking for compatibility and feature support with Azure Database.</p> <p>You should already have an RDP session open to your teams Win10 Management VM, if so run DMA from the Start menus or Desktop icon.</p>	 <p>The screenshot shows the Windows Start menu interface. On the left, under the 'Most used' section, the 'Microsoft Data Migration Assistant' icon is circled in red. Other visible icons include 'Microsoft SQL Server Management Studio', 'Snipping Tool', 'Paint', and 'Services'. On the right, under the 'Windows Server' section, icons for 'Server Manager', 'Windows PowerShell', 'Windows PowerShell ISE', 'Windows Administrative Tools', 'Task Manager', 'Control Panel', 'Remote Desktop...', 'Event Viewer', and 'File Explorer' are visible. The taskbar at the bottom shows the Start button, search bar, and several pinned applications including Edge, File Explorer, and the DMA icon.</p>	<p>Database Migration Assistant (DMA) is a free download from Microsoft. It can be used to assess a number of database migration & upgrade scenarios not just SQL Server to Azure SQL Database.</p>

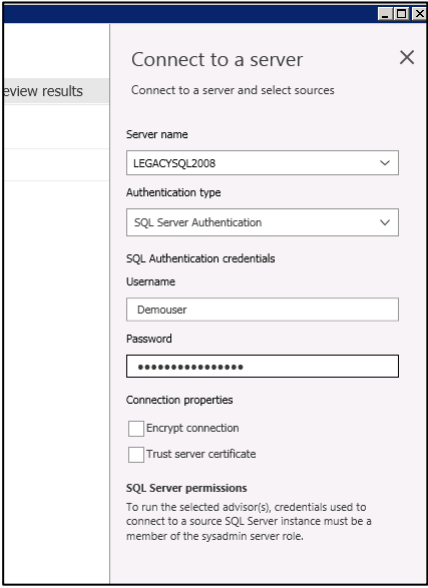
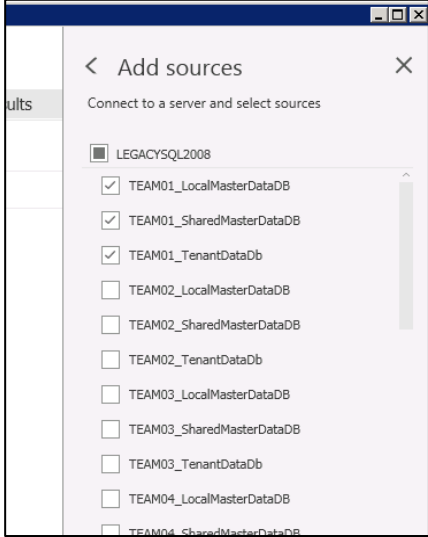
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You should see this screenshot to the right.

Select the “+” to create a new **assessment** project

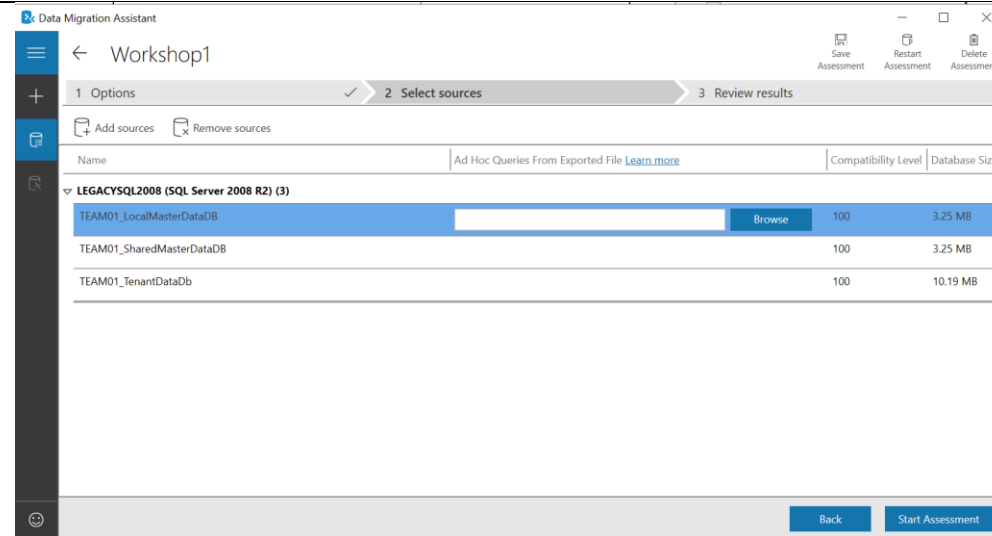


<p>Select/Enter the following details:</p> <p>Project name: Workshop1</p> <p>Assessment type: Database Engine</p> <p>Source server type: SQL Server</p> <p>Target server type: Azure SQL Database</p> <p>Click 'Create'</p>		<p>Our first project assessment assumes we will be migrating to Azure SQL DB, so the options shown in the screenshot need to be selected.</p>
<p>Select the assessment checks (Report Type) to be made:</p> <p>Check database compatibility</p> <p>Check feature parity</p> <p>Click 'Next'</p>		<p>DMA can test for both database compatibility and feature parity compliance against the Azure target.</p> <p>As this is the initial evaluation, we are assessing a database(s) we will perform all of these tests.</p>

<p>Enter the source/legacy SQL details:</p> <p>Server Name: LEGACYSQL2008</p> <p>Authentication Type: SQL Server Authentication</p> <p>Username: Demouser</p> <p>Password: Demo@pass1234567</p> <p>Untick “Encrypt connection”</p> <p>Click ‘Connect’</p> <p>If you get an error logging in check that the Win10 keyboard language</p>		<p>When performing this within your own subscription you will enter the host, authentication and connection types according to your company guidelines and practices.</p> <p><i>Bear in mind that DMA needs to connect to a source SQL Server using an account that belongs to the sysadmin role.</i></p> <p>As this document is produced within a workshop environment Active Directory, Certificates and encryption has not been setup.</p>
<p>Select only the 3 databases used by your ‘Online Transaction Monitor’ app. These will have a TEAMxx prefix where XX should be replaced by your team number.</p> <p>TEAMxx_LocalMasterDataDb</p> <p>TEAMxx_SharedMasterDb</p> <p>TEAMxx_TenantDataDb</p> <p>Click ‘Add’ to add them to the assessment.</p>		<p>DMA will show all databases located on the Source host and display them so you can decide which ones to include in this assessment project.</p> <p>Note that you can assess multiple databases at the same time.</p>

You should now see the screen on the right with the relevant TEAMxx databases listed.

Select **'Start Assessment'**



Note: DMA allows you to either 'Add' or 'Remove' additional data sources as needed at this point.

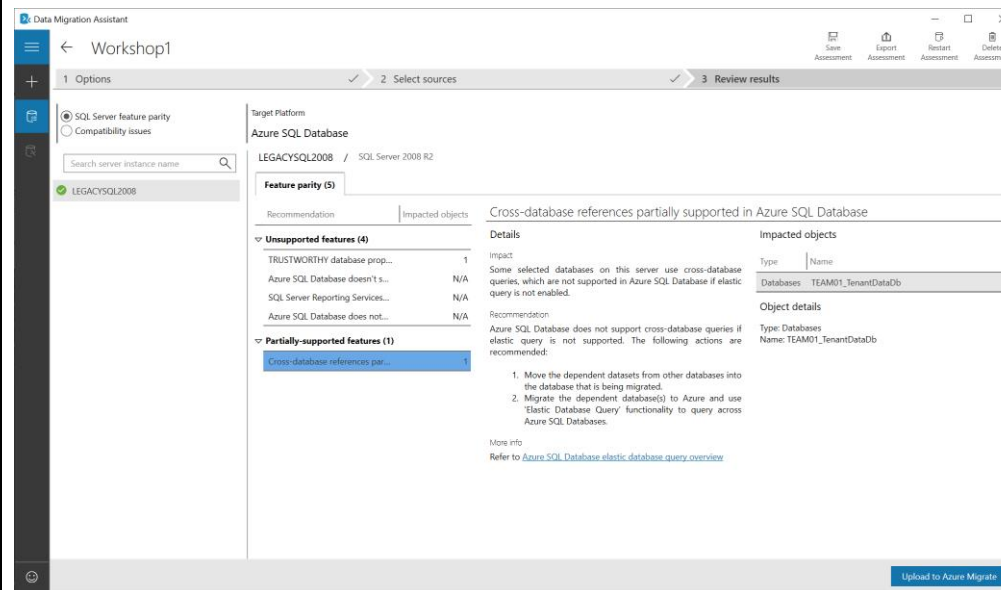
Also note that DMA provides some high-level metadata about the databases including their compatibility level the total size of each database.

[Using Data Migration Assistant to assess an application's data access layer](#)

DMA will now show the results of the assessment using 2 separate reports:

'SQL Server feature parity' which is a server level report highlighting any server settings or components (e.g. MSDTC) that the source DBs are using that isn't supported on the target – in this case Azure SQL Database.

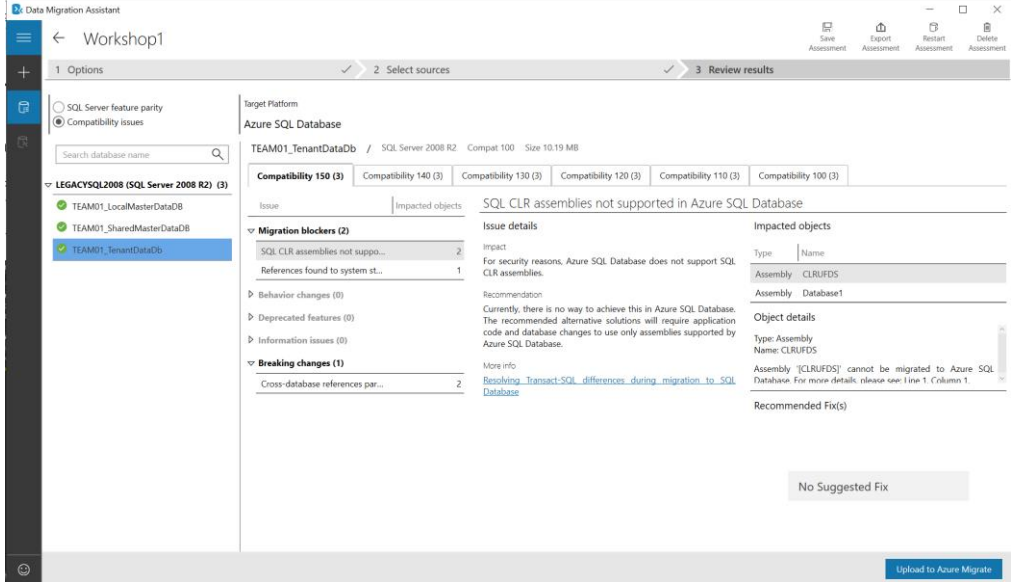
In our assessment there is one 'Unsupported feature' reported (**cross database queries**).



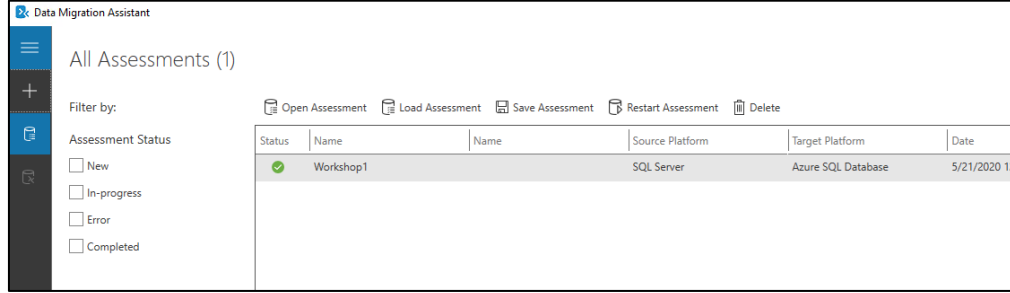
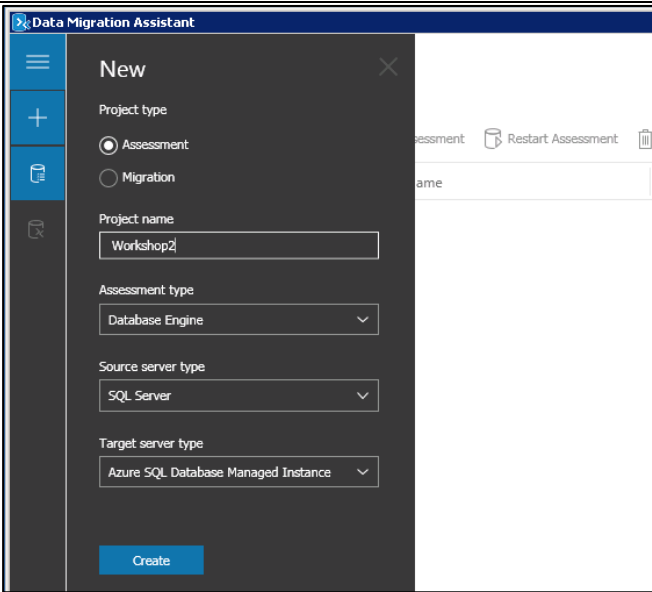
Note: Toggle the parity and compatibility issues radio button (top left) to switch between the 2 reports.

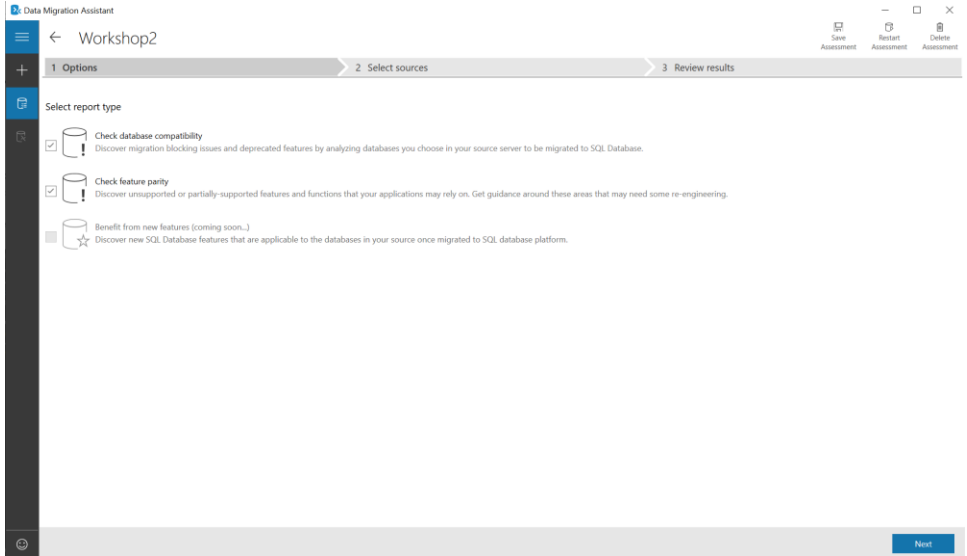
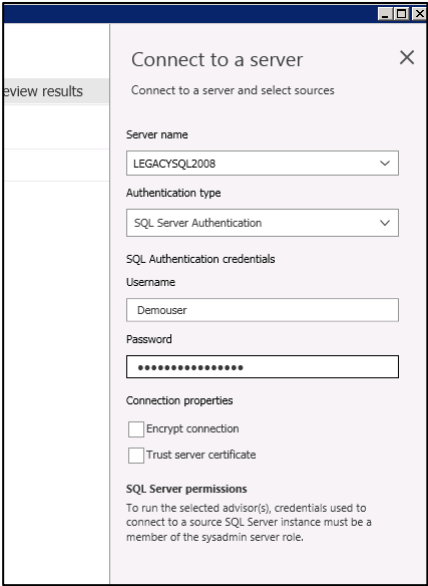
'SQL Server feature parity' shows what features are not supported in the target data source. Under the 'Details' and 'Databases' sections on the right you will find remedial action that are required and the databases impacted.

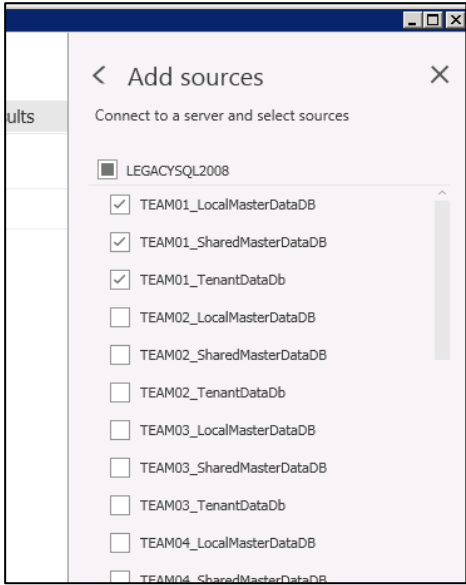
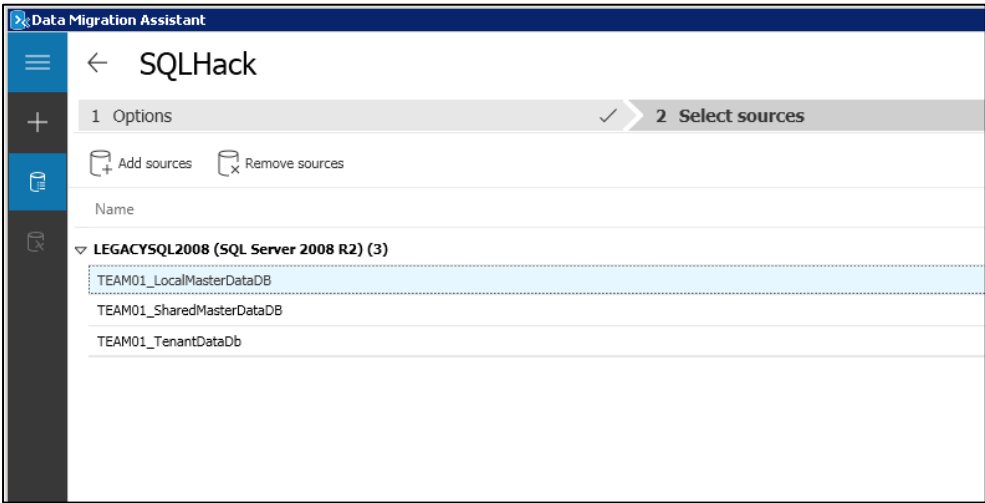
'Compatibility Issues' shows, over the compatibility tabs, issues that need to be addressed to permit the database(s) to run, in the

<p>‘Compatibility Issues’ which is a database level report detailing individual objects that have compatibility issues.</p> <p>Select ‘TEAMxx_TenantDataDb’</p> <p>Note the 5 ‘Migration blockers’ including CLR which the database uses.</p> <p>CLR is not supported on Azure SQL DB but is supported by Azure SQL Database Managed Instance (SQLMI).</p>		<p>chosen compatibility level (e.g. 150, 140, 130, 120, 110, 100).</p> <p>If you have multiple databases, as with the example screenshot, you need to highlight EACH database to see the compatibility issues.</p>
<p>Once you’ve reviewed the assessment click the back arrow to see a list of current DMA projects.</p>		
	<p>Because we need to migrate CLR Stored Procs, we need to repeat the assessment with Azure SQL DB Managed Instance as the target to see if it’s compatible</p>	
<p>You should see this screenshot to the right.</p>		

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<p>Select the “+” to create a new assessment project.</p>	 <p>The screenshot shows the 'Data Migration Assistant' interface. On the left is a sidebar with a menu icon, a '+' icon, and a document icon. The main area is titled 'All Assessments (1)'. Below this is a 'Filter by:' section with 'Assessment Status' and checkboxes for 'New', 'In-progress', 'Error', and 'Completed'. Above the table are buttons: 'Open Assessment', 'Load Assessment', 'Save Assessment', 'Restart Assessment', and 'Delete'. The table has columns: 'Status', 'Name', 'Name', 'Source Platform', 'Target Platform', and 'Date'. One row is visible: 'Workshop1' with status 'New', source 'SQL Server', target 'Azure SQL Database', and date '5/21/2020 12'.</p>	
<p>Select/Enter the following details:</p> <p>Project name: Workshop2</p> <p>Assessment type: Database Engine</p> <p>Source server type: SQL Server</p> <p>Target server type: Azure SQL Database Managed Instance</p> <p>Click ‘Create’</p>	 <p>The screenshot shows the 'New' dialog box in the 'Data Migration Assistant'. It has a sidebar with a menu icon, a '+' icon, and a document icon. The main area is titled 'New'. It contains the following fields: 'Project type' with radio buttons for 'Assessment' (selected) and 'Migration'; 'Project name' with a text box containing 'Workshop2'; 'Assessment type' with a dropdown menu showing 'Database Engine'; 'Source server type' with a dropdown menu showing 'SQL Server'; and 'Target server type' with a dropdown menu showing 'Azure SQL Database Managed Instance'. At the bottom is a blue 'Create' button.</p>	<p>Our 2nd assessment project assumes we will be migrating to Azure SQL DB Managed Instance, so the options shown in the screenshot need to be selected.</p>

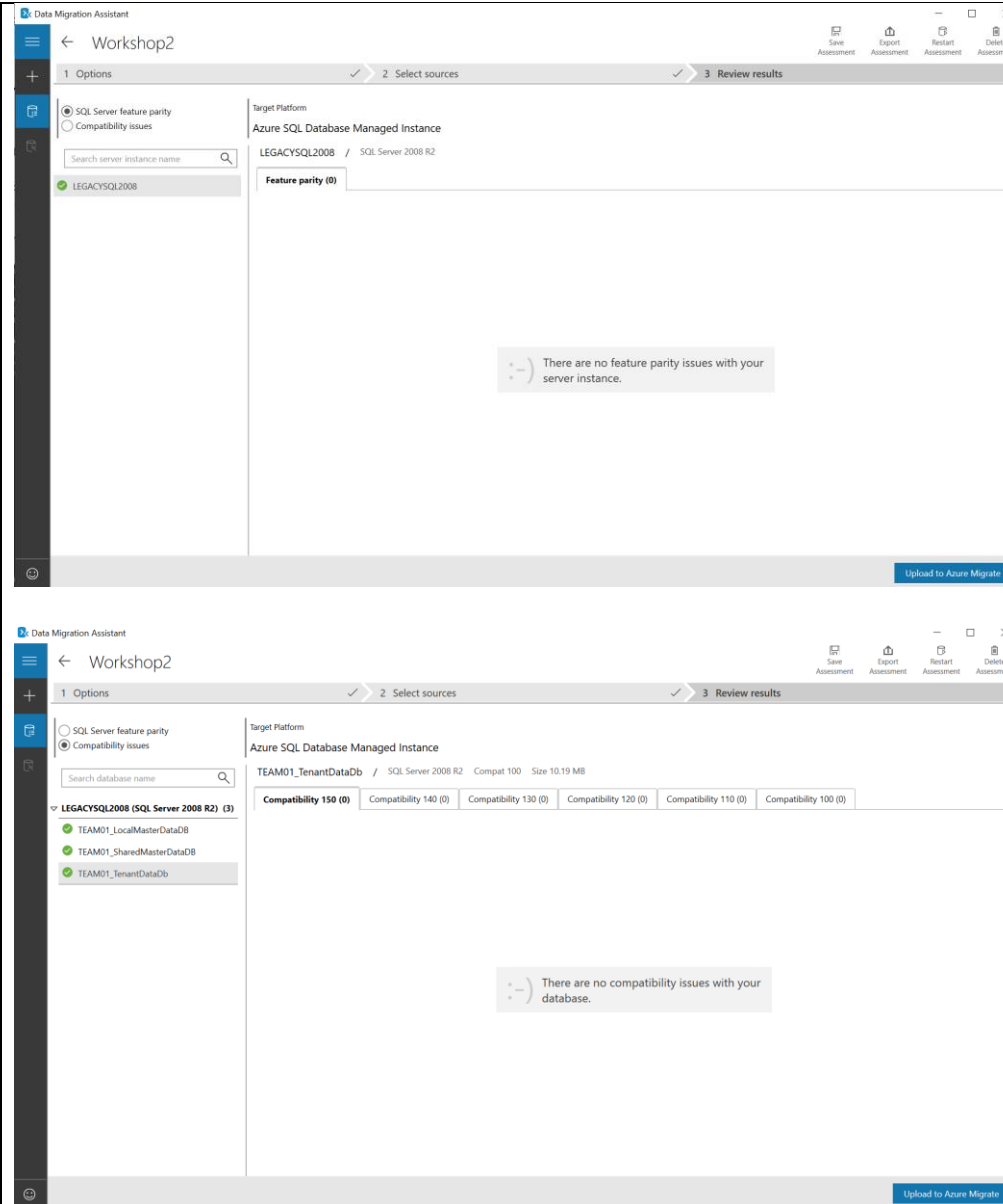
<p>Select the assessment checks (Report Type) to be made:</p> <p>Check database compatibility</p> <p>Check feature parity</p> <p>Click 'Next'</p>		<p>As we saw previously DMA can test for both database compatibility and feature parity compliance against the chosen target.</p> <p>As before we will assess all the databases against all of the tests.</p>
<p>Enter the source/legacy SQL details:</p> <p>Server Name: LEGACYSQL2008</p> <p>Authentication Type: SQL Server Authentication</p> <p>Username: Demouser</p> <p>Password: Demo@pass1234567</p> <p>Untick "Encrypt connection"</p> <p>Click 'Connect'</p>		<p>When performing this within your own subscription you will enter the host, authentication and connection types according to your company guidelines and practices.</p> <p><i>Bear in mind that DMA needs to connect to a source SQL Server using an account that belongs to the sysadmin role.</i></p> <p>As this document is produced within a workshop environment Active Directory, Certificates and encryption has not been setup.</p>

<p>Select only the 3 database used by your 'Online Transaction Monitor' app. These will have a TEAMXX prefix where XX should be replaced by your team number.</p> <p>TEAMxx_LocalMasterDataDb TEAMxx_SharedMasterDb TEAMxx_TenantDataDb</p> <p>Click 'Add' to add them to the assessment.</p>		<p>DMA will show all databases located on the Source host and display them so you can decide which ones to include in this assessment project.</p> <p>Note that you can assess multiple databases at the same time.</p>
<p>You should now see the screen on the right with the relevant TEAMXX databases listed.</p> <p>Select 'Start Assessment'</p>		<p>Note: DMA allows you to either 'Add' or 'Remove' additional data sources as needed at this point.</p> <p>Also note that DMA has identified what compatibility level each source database is running under.</p>

As before DMA will now show the results from the assessment as the separate 2 reports.

Note the **'SQL Server feature parity'** report will either be clean

The **'Compatibility Issues'** report should be clear for all 3 databases showing that they can be migrated to Azure SQLDB Managed Instance without changes.



Note: Toggle the parity and compatibility Issues radio button (top left) to see how DMA.

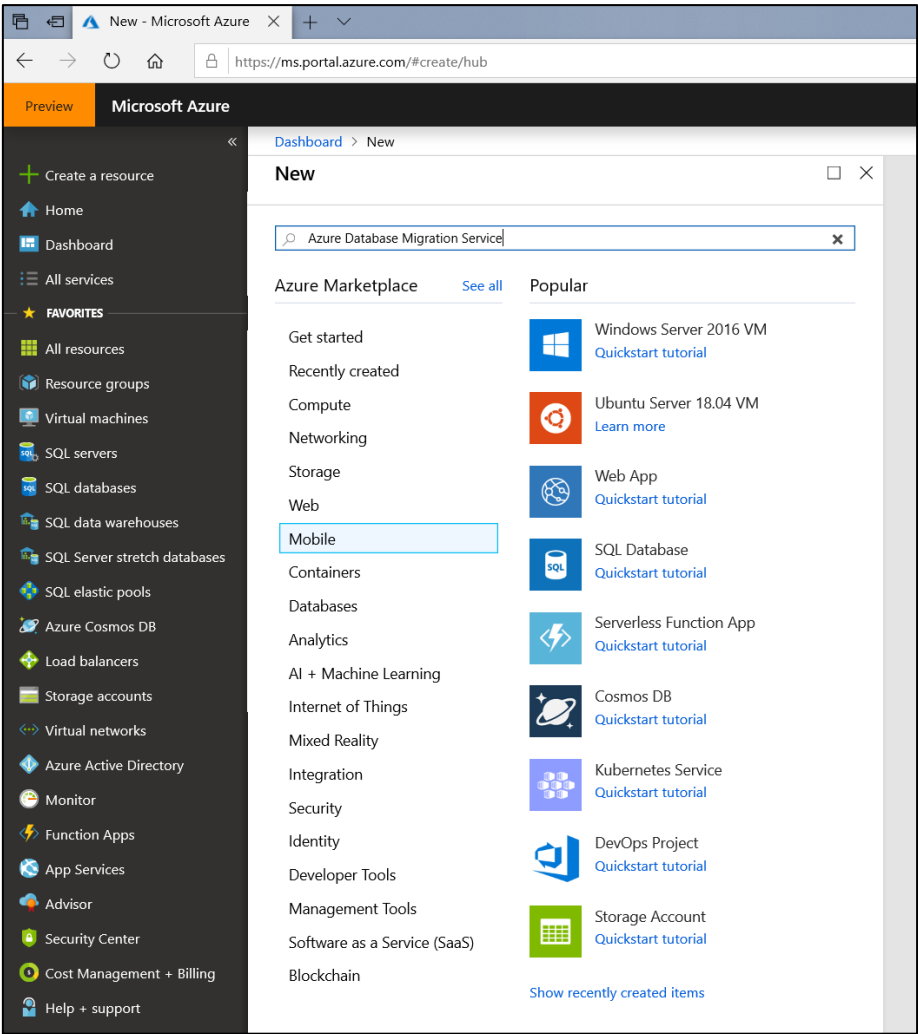
'SQL Server feature parity' shows what features are not supported in the target datasource. Under 'Details' and 'Databases' you will find remedial action that are required and the databases impacted.

'Compatibility Issues' shows, over the compatibility tabs, issues that need to be addressed to permit the database(s) to run, in the chosen compatibility level (e.g. 159,140, 130, 120, 110,100).

If you have multiple databases, as with the example screenshot, you need to highlight **EACH** database to see the compatibility issues.

	<p>We are now ready to migrate the application databases to Azure SQL Database Managed Instance</p>	

3. Use Azure Database Migration Service (DMS) to migrate the 3 application databases

Narrative	Screenshot	Notes
<p>We will be using Azure Database Migration Service (DMS) to migrate the legacy SQL2008 databases to Azure.</p> <p>For the workshop DMS will already been provisioned as it can take 20-30mins to be deployed.</p> <p>If you were doing this yourself you would need to provision DMS before you could begin the migration process and would need to follow the DMS setup blades according to your organisational guidelines.</p>		<p>DMS is provisioned as a service which hosts & runs multiple migration Projects. Each Project is responsible for migrating one or more databases.</p> <p>Although a Project can migrate multiple databases each Project can only migrate databases from a single source host to a single target destination.</p> <p>In this lab we will use a single Project to migrate 3 databases from the same legacy SQL2008 host to Azure SQL Managed Instance.</p> <p>DMS can host and run different types of database migration Projects under the same instance e.g. separate Project for separate source servers.</p> <p>Overview of DMS: Azure Database Migration Service</p> <p>DMS tutorials: Migrate SQL Server to an Azure SQL Managed Instance offline using DMS</p>

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For this workshop:

On your Win10 VM open Edge browser and got to:

[HTTPS://portal.azure.com](https://portal.azure.com)

Username and Password:
(see *your Teams Group*)

In the Azure portal, open the **SQLHACK-SHARED Resource Group** and locate the **Azure Database Migration Service** and open it.

On the DMS Overview blade click **'+ New Migration Project'**

The screenshot shows the Azure portal interface for the 'sqlhack-migrationservice'. The left-hand navigation pane is visible, with 'Overview' selected. The main content area displays a green success message: 'Great job! Your database migration service was successfully created. You can create your first migration project now.' Below this, the 'Essentials' section lists key properties: Resource group (SQLHACK-SHARED), Status (Online), Virtual network & IP Address (SQLHACK-SHARED-vnet/subnets/Management 10.0.2.5), Location (North Europe), Subscription ID (d0c626bd-aad6-44e...), Subscription (OTA-PRD-664), SKU (Premium: 4 vCores), and Service/UI Version (5.1.5100.3/5.1.5101.3). A table with columns 'Name', 'Source', and 'Target' is shown, indicating 'No database migration projects to display'. At the bottom right, there is a 'New migration project' button.

<p>On the “New migration project” blade use the following settings:</p> <p>Project name: TEAMxx_migration <i>(replace XX with your team number)</i></p> <p>Source server type: SQL Server</p> <p>Target Server type: Azure SQL Database Managed Instance</p> <p>Choose type of activity: Offline data migration</p> <p>Click ‘Create and run activity’</p>	<p>Home > Resource groups > SQLHACK-SHARED > sqlhack-migrationservice ></p> <h2>New migration project</h2> <p>A database migration project is a group of database activities that you can migrate together.</p> <p>Migration project name</p> <p>Project name * ⓘ <input type="text" value="TEAM01_migration"/> ✓</p> <p>Choose your source and target server type.</p> <p>Source server type * ⓘ <input type="text" value="SQL Server"/> ▼</p> <p>Target server type * ⓘ <input type="text" value="Azure SQL Database Managed Instance"/> ▼</p> <p>Choose your migration activity type.</p> <p>Migration activity type * ⓘ <input type="text" value="Offline data migration"/> ▼</p> <p>Use this option to migrate databases that won't be updated during migration.</p> <p>To successfully use Database Migration Service (DMS) to migrate data, you need to:</p> <ol style="list-style-type: none"> 1. Create the target Azure SQL Database Managed Instance. 2. Use DMA to assess your on-premises SQL Server database(s) for feature parity and compatibility issues. 3. Apply the fixes to target Azure Database Managed Instance as recommended by DMA after the migration. <p>Install Database Migration Assistant ⓘ</p> <p>Create and run activity</p>	<p>DMS can perform two types of database migrations:</p> <ul style="list-style-type: none"> - Offline - Online <p>Offline migrations use backup files. The backups can be provided to DMS or DMS can create the backup as part of a project.</p> <p>Whilst the simplest to perform, taking the backup, moving it to Azure and restoring it can cause significant downtime.</p> <p>Online migrations use a replication or log shipping approach to keep the source & target in sync. Whilst more complex it significantly reduces database downtime.</p>

DMS will now launch the migration configuration blades. Use the following values for each of the configuration steps:

STEP 1: Select Source

The source is the legacy SQL VM host:

Source SQL Server:

LEGACYSQL2008

Authentication Type:

SQL Authentication

User Name:

Demouser

Password

Demo@pass1234567

Untick “Encrypt connection”

Click ‘**Next: Select target >>**’

DMS will now perform a connection test to source environment.

The account that DMS uses to connect to the source instance must be a member of sysadmin.

<p><u>STEP 2: Select Target</u></p> <p>Target SQL Server: (see C:\SQLHACK\LABS\01-Data_Migration\Managed Instance FQDN.txt for the SQL Managed Instance name)</p> <p>Authentication Type: SQL Authentication</p> <p>User Name: Demouser</p> <p>Password: Demo@pass1234567</p> <p>Click 'Next:Select databases>>'</p> <p><i>DMS will now perform a connection test to target environment.</i></p>	<p>Home > Resource groups > SQLHACK-SHARED > sqlhack-migrationservice ></p> <h2>SQL Server to Azure SQL Managed Instance Offline Migration Wizard</h2> <p>Select source Select target Select databases Select logins Configure migration settings Summary</p> <div> <p>Target server name * ⓘ <input type="text" value="sqlhackmi-worwegr7vulcu.c1463e2d4611.database.windows.net"/> ✓</p> <p>Authentication type ⓘ <input type="text" value="SQL Authentication"/> ▼</p> <p>User Name * ⓘ <input type="text" value="DemoUser"/> ✓</p> <p>Password <input type="password" value="....."/> ✓</p> </div> <div style="margin-top: 20px;"> Review and start migration << Previous Next : Select databases >> </div>	
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STEP 3: Select Databases

The application has 3 databases supporting it. **Select the 3 databases for your team.**

TEAMxx_LocalMasterDataDb

TEAMxx_SharedMasterDb

TEAMxx_TenantDataDb

(replace XX with your team number)

Select '**Next: Select logins>>**

portal.azure.com/#@OTAPRD664ops.onmicrosoft.com/resource/subscriptions/d0c626bd-aad6-44ea-ad07-7dd0f03d4f39/resourceGroups/SQLHACK-SHARED/providers/Microsoft.Sql/migration-wizards/legacysql2008

Microsoft Azure

Home > sqlhack-migrationservice >

SQL Server to Azure SQL Managed Instance Offline Migration Wizard

Select source | Select target | **Select databases** | Select logins | Configure migration settings | Summary

Source server name
legacysql2008

Search to filter items...

☒ Source databases (60)

- ☒ TEAM01_LocalMasterDataDB
- ☒ TEAM01_SharedMasterDataDB
- ☒ TEAM01_TenantDataDb
- ☐ TEAM02_LocalMasterDataDB
- ☐ TEAM02_SharedMasterDataDB
- ☐ TEAM02_TenantDataDb
- ☐ TEAM03_LocalMasterDataDB
- ☐ TEAM03_SharedMasterDataDB
- ☐ TEAM03_TenantDataDb
- ☐ TEAM04_LocalMasterDataDB
- ☐ TEAM04_SharedMasterDataDB
- ☐ TEAM04_TenantDataDb
- ☐ TEAM05_LocalMasterDataDB
- ☐ TEAM05_SharedMasterDataDB
- ☐ TEAM05_TenantDataDb

Review and start migration | << Previous | Next : Select logins >>

STEP 4: Select Logins

As with a traditional on-premise migrations the SQL Server level logins must be migrated alongside the database. Select the database logins, from the list, that are required for the application.

Select ***only*** your **'TEAMxx'** login.

Select
Next: Configure migration settings>>

Microsoft Azure

Home > sqlhack-migrationservice >

SQL Server to Azure SQL Managed Instance Offline Migration Wizard

Select source Select target Select databases **Select logins** Configure migration settings Summary

Source server name
legacysql2008

Search to filter items...

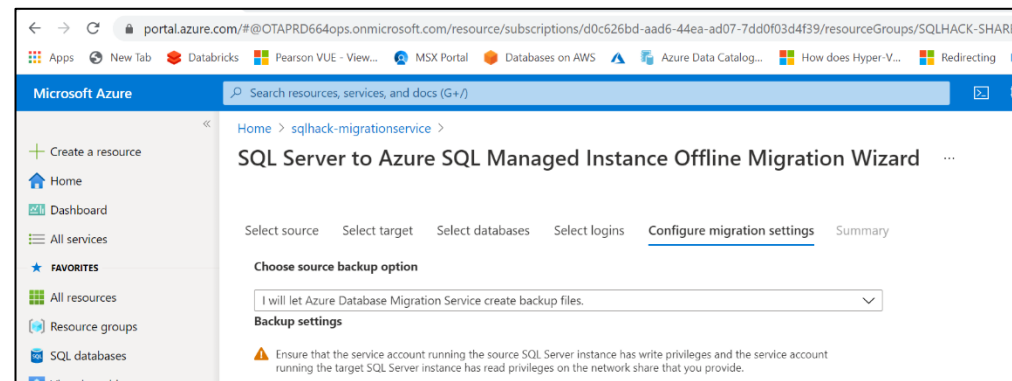
Source logins (28)	Login type	Default database	Status
<input checked="" type="checkbox"/> TEAM13	SQL	master	Enabled
<input type="checkbox"/> TEAM09	SQL	master	Enabled
<input type="checkbox"/> TEAM05	SQL	master	Enabled
<input type="checkbox"/> NT Service\SQLIaaS...	Windows group	master	Enabled
<input type="checkbox"/> LEGACYSQL2008\De...	Windows	master	Enabled
<input type="checkbox"/> TEAM07	SQL	master	Enabled
<input type="checkbox"/> TEAM04	SQL	master	Enabled
<input type="checkbox"/> TEAM19	SQL	master	Enabled
<input type="checkbox"/> TEAM06	SQL	master	Enabled
<input type="checkbox"/> ##MS_Policy\Isq\Exec...	SQL	master	Disabled
<input type="checkbox"/> sa	SQL	master	Disabled
<input type="checkbox"/> TEAM15	SQL	master	Enabled
<input type="checkbox"/> TEAM10	SQL	master	Enabled
<input type="checkbox"/> TEAM03	SQL	master	Enabled
<input type="checkbox"/> TEAM11	SQL	master	Enabled

Review and start migration << Previous Next : Configure migration settings >>

Step 5: Configure migration Settings***(Choose source backup option)***

We are running an offline migration which will create and use backups of the DBs that are being migrated.

We want DMS to perform the backups, so select this option from the “Choose source backup option” (as shown).



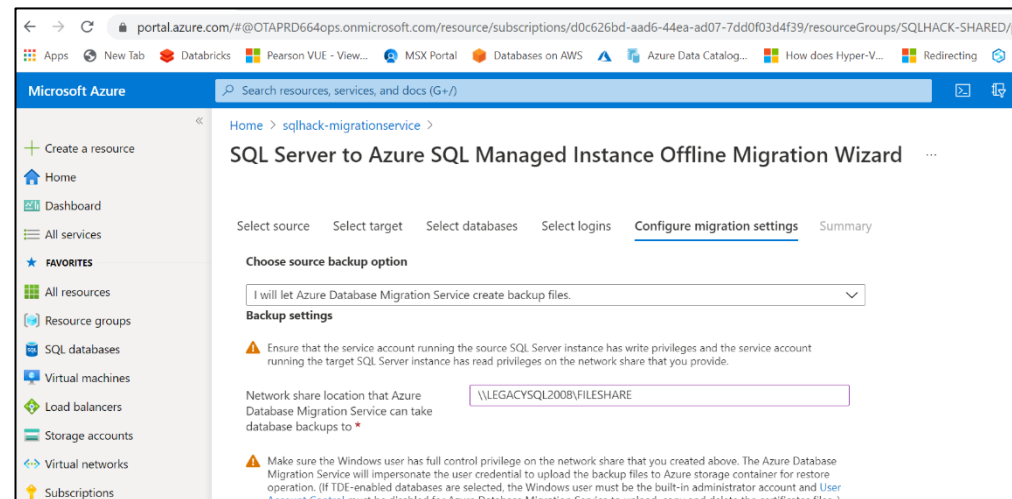
DMS can use backup files provided or take the backups as part of the migration activity.

Step 5: Configure migration Settings***(Backup settings)***

We can now enter the Windows share that the source server will write the database backups to.

Network Share:

\\LEGACYSQL2008\FILESHARE



Next provide the username and password of the windows account that will permit the DMS service to run the backups on the source host and save them to the share on the legacy server.

Windows User Azure Database Migration Service impersonates to upload files to Azure Storage:

LEGACYSQL2008\Demouser
Password:
Demo@pass1234567

The screenshot shows the Azure portal interface for the 'SQL Server to Azure SQL Managed Instance Offline Migration Wizard'. The wizard is at the 'Configure migration settings' step, which includes sections for 'Choose source backup option', 'Backup settings', 'Storage account settings', and 'Windows User Azure Database Migration Service impersonates to upload files to Azure Storage'.

Choose source backup option: A dropdown menu is set to 'I will let Azure Database Migration Service create backup files.'

Backup settings: A warning icon indicates that the service account running the source SQL Server instance must have write privileges and the service account running the target SQL Server instance must have read privileges on the network share that you provide.

Storage account settings: A warning icon indicates that the SAS URI must allow the Azure Database Migration Service to access the storage account container that Azure Database Migration Service will upload the backup files to and use for migrating the databases to SQL DB Managed Instance. A link for creating SAS URI is provided.

Windows User Azure Database Migration Service impersonates to upload files to Azure Storage: The username is 'LEGACYSQL2008\Demouser' and the password is masked with dots. A green checkmark indicates the password is valid.

Step 5: Configure migration Settings ***(Storage account settings)***

DMS is an Azure Service. We have to provide the Shared Access Signature token (or “SAS URI” for short) to permit DMS to upload the backup files from the share on the LEGACYSQL2008 host to Azure blob storage where the SQL Managed Instance can access them during the restore process.

The SAS URI is both the URL of a container (folder) in Azure Blob Storage and the key to access it.

The SAS URI can be found in:
C:_SQLHACK_\LABS\01-Data Migration\SASKey.txt

Enter the SAS URI key and click **‘Next : Summary>>’**.

*This will perform a connection test and if successful will display the **Summary** screen.*

Once DMS has taken backups of the databases to be migrated it needs to move these backups to Azure storage. This is so the target SQL Managed Instance can access them to restore them.

STEP 5: Configure migration Settings (Summary)

DMS displays a summary of the migration settings.

Now we need to use these settings to actually perform a migration. To do this we create and run an “Activity”.

On the **Summary** settings enter an activity name :

Activity Name

TEAMxx_migration_activity
(replace XX with your team number)

Click ‘**Start migration**’

The screenshot shows the 'SQL Server to Azure SQL Managed Instance Offline Migration Wizard' in the 'Summary' tab. The 'Activity name' field is highlighted with a yellow box and contains the text 'workshop_migration_17'. Other fields include 'Target server name', 'Target server version', 'Source server name', 'Source server version', 'Databases to migrate', and 'Login(s) to migrate'. A 'Start migration' button is visible at the bottom.

Validate my databases option

Selecting this validation option forces DMS to do the following tasks:

1. Takes top 100 resource intense queries and re-runs them against the target and reports the success/failure rate
2. Table checksum on all rows and report any differences

This can be an intensive process so best test it with a non-production migration to see how much extra time it adds to the migration.

SQL Modernisation Open Hack

DMS will now run the migration activity.

Initially this screen will be displayed.

Click **Refresh** to monitor the progress of your migration.

Notice the database counts under the following columns as you keep pressing 'Refresh':

“IN PROGRESS”
“COMPLETED”
“FAILED”

portal.azure.com/#@OTAPRD6640ps.onmicrosoft.com/resource/subscriptions/d0c626bd-aad6-44ea-ad07-7dd903d4f39/resourceGroups/SQI-HACK-SHARED/providers/MicrosoftSQL...

Microsoft Azure

Search resources, services, and docs (G+J)

Home > sqlbak-migrationservice >

workshop_migration_17

Delete migration Stop migration Refresh Retry Download report

Source server

legoqa2008

Source version

SQL Server 2008 R2
10.50.6392.0

Server objects

4

Target server

sqlbakdemo-73a7bf9f1qbi.e3952c185612e.database.windows.net

Target version

Azure SQL Database Managed Instance
12.0.2000.8

Search to filter items...

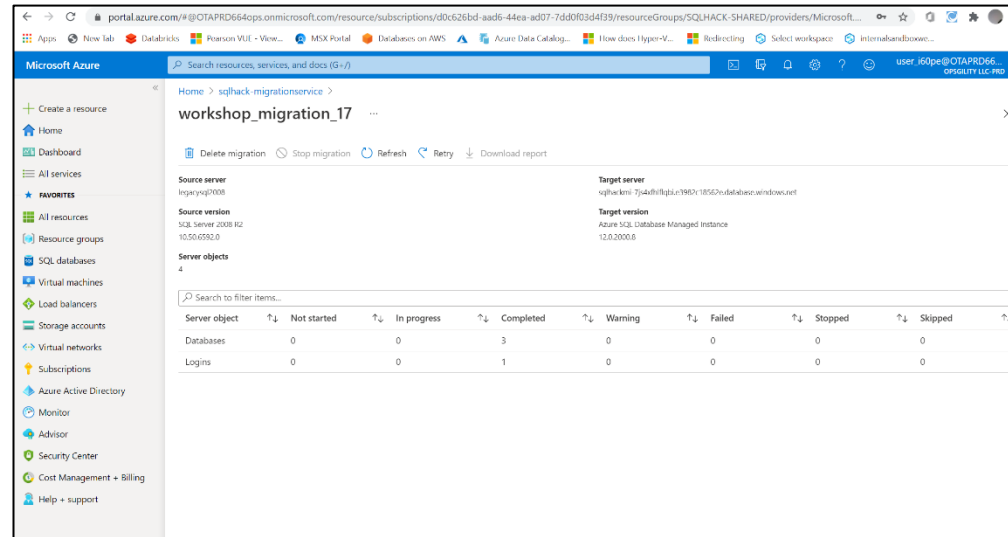
Server object	Not started	In progress	Completed	Warning	Failed	Stopped	Skipped
Databases	0	3	0	0	0	0	0
Logins	0	0	0	0	0	0	0

During the migration process you can monitor the creation of the 3 backup files by opening the fileshare \\LEGACYSQL2008\FILESHARE

Also note that DMS cleans-up after itself & deletes the backups from the files share once they have been copied up the Storage Account.

SQL Modernisation Open Hack

Under “COMPLETED”, when the number of databases says “3” the migration activity has completed.



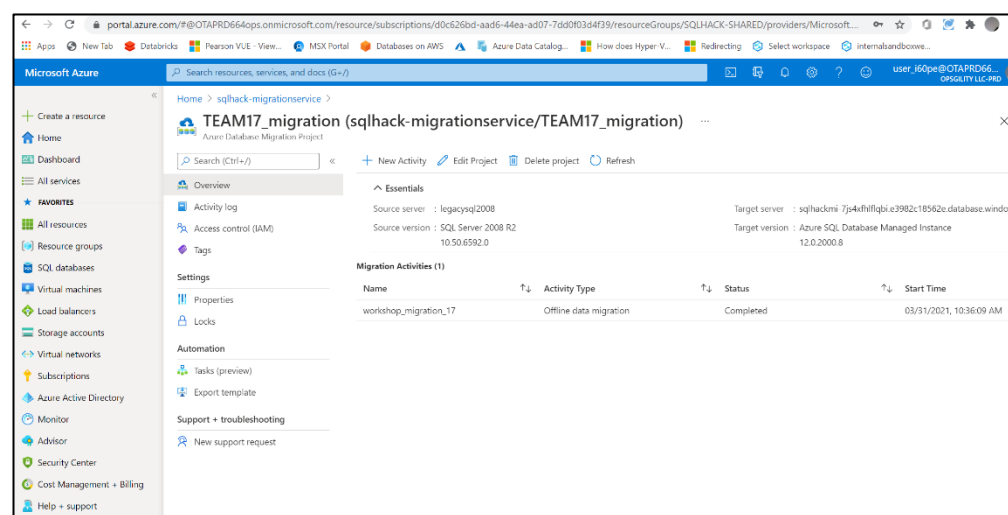
Server object	Not started	In progress	Completed	Warning	Failed	Stopped	Skipped
Databases	0	0	3	0	0	0	0
Logins	0	0	1	0	0	0	0

If there are any warnings, errors or skipped databases they will have a database count under the corresponding headings in the status page.

It is assumed, for the workshop, that all three databases have migrated successfully.

Close the migration activity.

On the migration project screen notice that your migration activity is displayed.



Name	Activity Type	Status	Start Time
workshop_migration_17	Offline data migration	Completed	03/31/2021, 10:36:09 AM

DMS keeps a history of activity runs for migration projects. A migration activity can be edited and ran again.

4. Confirm application databases have been migrated to Azure SQL Managed Instance

On your Win10 VM open SQL Management Studio and connect to the target Azure SQL Database Managed Instance using these details:

Server:

(see

C:\SQLHACK_\LABS\01-Data_Migration\Managed Instance FQDN.txt)

SQL Authentication

Username:

Demouser

Password:

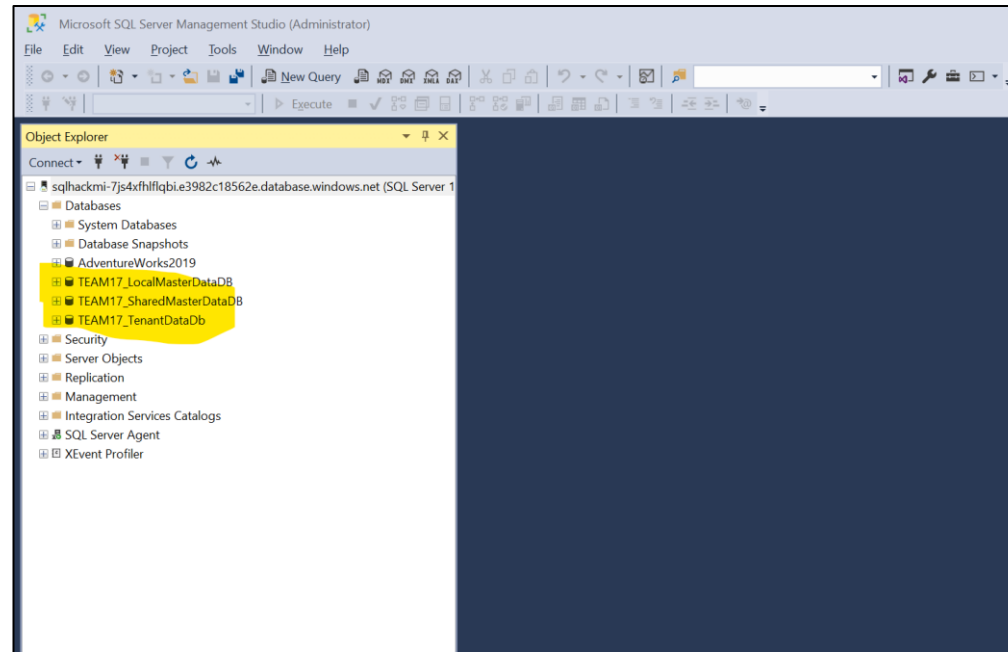
Demo@pass1234567

Open the 'Databases' folder and verify the three databases have been migrated and are online.

TEAMxx_LocalMasterDataDb

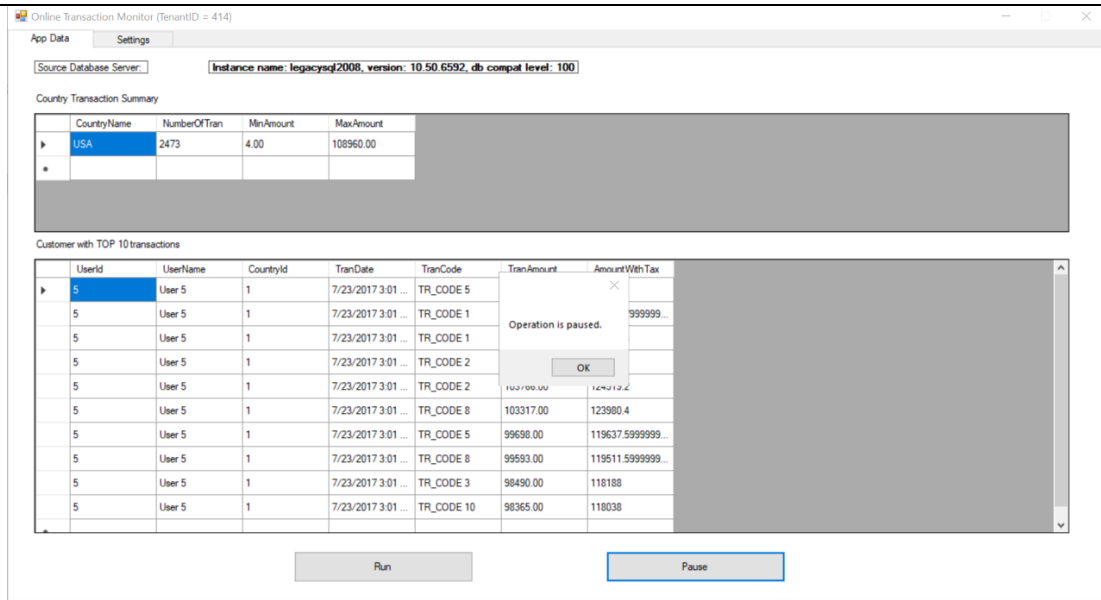
TEAMxx_SharedMasterDb

TEAMxx_TenantDataDb



5. Connect 'Online Transaction Monitor' App to Azure SQL DB Managed Instance

Now that we have migrated the databases to Azure we need to restart the application to use the new database.

Narrative	Screenshot	Notes
<p>On your team Win10 management VM run the SimpleTranReportApp application.</p> <p>Note: You will likely already have the app loaded from the earlier stage in this workshop. If it is still running simulated transactions, click 'Pause'</p>		

Reconfigure the applications connection string so it's connects to the newly migrated databases on the SQL Managed Instance.

Once running, select the 'Settings' tab

Enter the following parameters into the fields identified:

ServerName:

(see

[C:\SQLHACK_\LABS\01-Data_Migration\Managed Instance FQDN.txt](#))

Initial Catalog:

TEAMxx_TenantDataDb

UserName:

TEAMxx

Password:

TEAMxx

Click 'Change Connection String' to apply these new settings.

Online Transaction Monitor (TenantID = 414)

App Data Settings

Build / change connection string

ServerName

sqlhackmi-7js4xfhlflqbi.e3982c18562e.database.windows.net

Initial catalog

team17_TenantDataDB

Username

Team17

Password

Change Connection String

Connection String

Data Source=sqlhackmi-7js4xfhlflqbi.e3982c18562e.database.windows.net;Initial Catalog=team17_TenantDataDB;Integrated Security=False;User ID=Team17;Password=TEAMxx;Name=UserTransactionsApp

Select the '**App Data**' tab
Click '**Run**'

GOTCHA

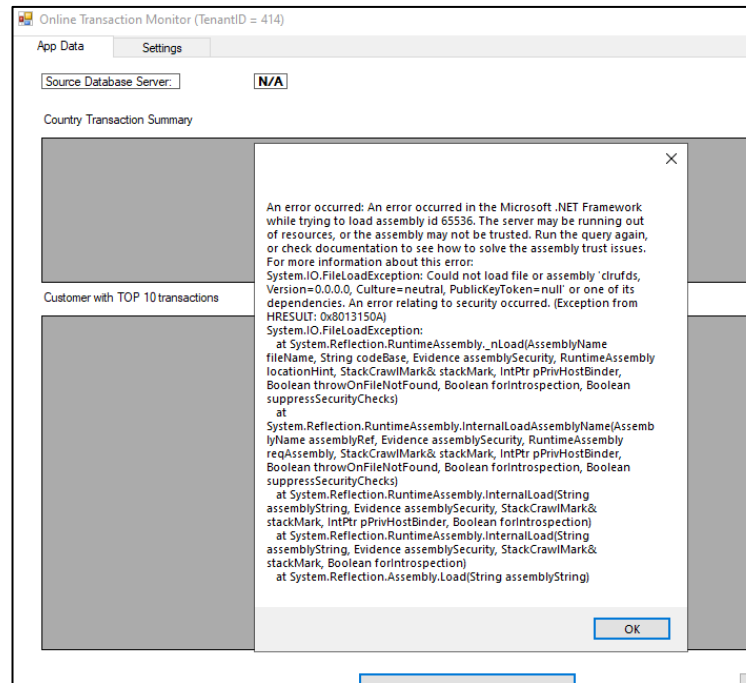
If you get a long-winded error when you run the application it's because the CLR assemblies don't have the correct trust settings in the migrated DBs.

Run the 3 ALTER DATABASE statements below and try starting the application again.

You can also find this statements already prepared in:

**C:_SQLHACK_\LABS\
01-Data_Migration\
Migration Helper Script.txt**

Now go back to the application and try running it again. After a few seconds you should see transactions start to appear.



-- CHANGE BELOW TO YOUR TEAM NUMBER (REPLACE XX)

```
USE [TEAMXX_TenantDataDb]
GO
```

EXEC dbo.sp_changedbowner 'sa'

```
alter database [TEAMXX_LocalMasterDataDB] set trustworthy on
go
alter database [TEAMXX_SharedMasterDataDB] set trustworthy on
go
alter database [TEAMXX_TenantDataDb] set trustworthy on
go
```

The application will generate simulated transactional data.

Notice how the 'Source Database Server' connection reflects the SQL Managed Instance proving that the database migration has been completed successfully.

Notice that the “Source Database Server” displayed at the top of the application shows the SQL Managed Instance FQDN.

Online Transaction Monitor (tenantID = 414)

App Data Settings

[Source Database Server: [Instance name: sqlrelay-es-d650cf8c6e77.database.windows.net, version: 12.00.2000, db comput level: 110]]

Country Transaction Summary

CountryName	NumberOfTran	MinAmount	MaxAmount
UK	2547	16.00	108985.00

Customer with TOP 10 transactions

Userid	UserName	CountryId	TransDate	TransCode	TransAmount	AmountWithTax
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 7	106910.00	119739.2
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 2	106841.00	119661.92
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 1	105504.00	118164.48
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 3	104732.00	117299.84
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 7	104329.00	116848.48
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 9	103348.00	115749.76
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 8	99112.00	111005.44
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 3	99035.00	110919.2
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 10	98650.00	110488
8	User 8	2	7/23/2017 3:01 ...	TR_CODE 2	98566.00	110383.92

Run Pause