

Migration Using Azure SQL Managed Instance

March 2019

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Introduction

Azure SQL Database Managed Instance is a new deployment model of Azure SQL Database, providing near 100% compatibility with the latest SQL Server on-premises (Enterprise Edition) Database Engine. Managed Instance allows existing SQL Server customers to lift and shift their on-premises applications to the cloud with minimal application and database changes. At the same time, Managed Instance preserves all PaaS capabilities (automatic patching and version updates, automated backups, high-availability), that drastically reduces management overhead and TCO. This lab walks you through the steps to create a Managed Instance.

For more information: <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-managed-instance-get-started>

Migration using SQL Managed Instance

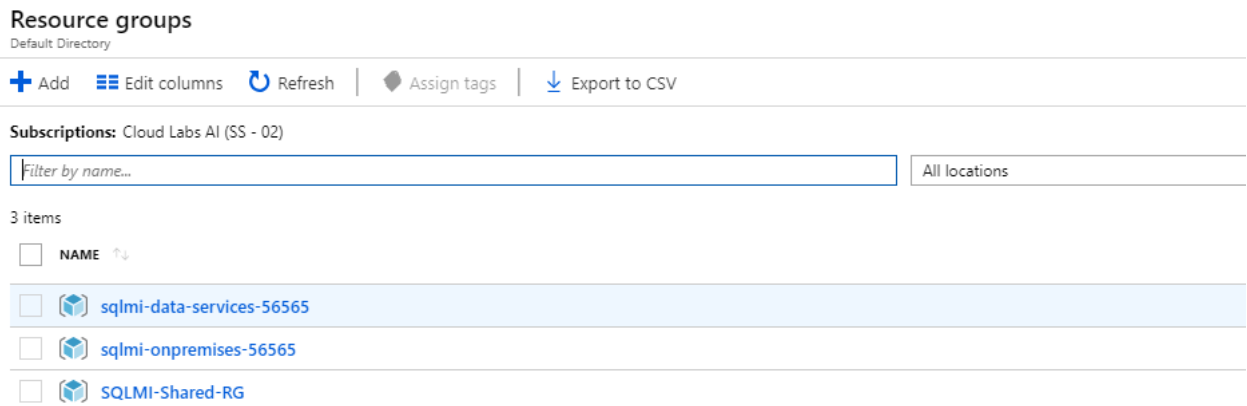
Exercise 0: Verify the Pre-deployed resources

Overview

You are given access to a pre-deployed SQL Managed Instance and SQL Server 2008 VM along with Data Migration Service which is pre-deployed in Azure

Task 1: Connect to Azure Portal

1. Launch a browser and navigate to <https://portal.azure.com>. Once prompted, login with the Azure Credentials from the Lab Details Page.
2. In the Stay signed in? pop-up window, click No
3. In the Welcome to Microsoft Azure pop-up window, click Maybe Later
Note: If you receive a pop-up for Azure Advisor, click the X in the top right corner of the pop-up to close it.
4. You will be directed to the dashboard.
5. From the left side of the Page, select Resource Groups
6. Note that you will have access to three Resource groups:



7. SQL Server 2008 VM is deployed in ODL-onpremises-***** Resource group and the SQLMI-Shared-RG has Managed Instance. Resource Group named sqlmi-data-services-**** contains Data Migration Service and Azure Data Factory

Exercise 1: View and Backup the Database

Overview

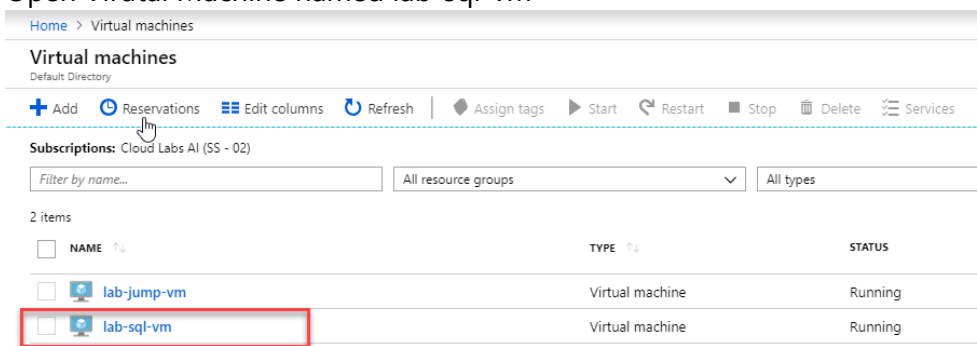
In this lab we are focusing on the offline database migration of an SQL 2008 database from "on-premises" to an Azure SQL Managed Instance (SQL-MI).

This lab does not address:

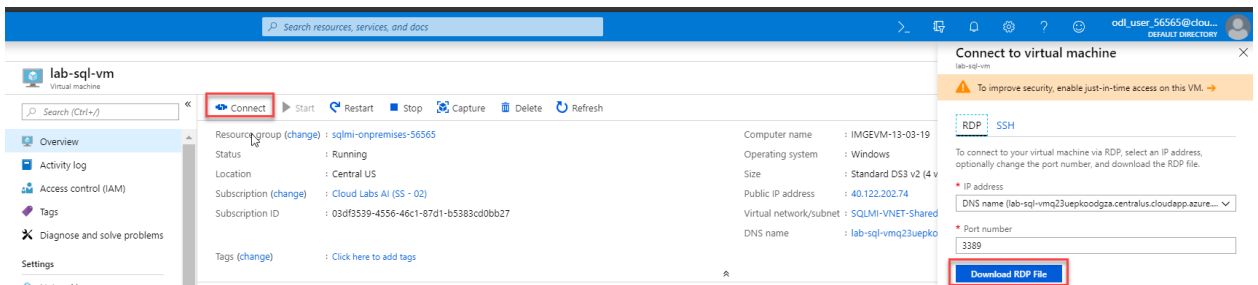
- * On-premise connectivity to Azure via virtual network gateway or ExpressRoute
- * Secure Azure Virtual Network connectivity configuration for on-premises connectivity

Task 1: View the data

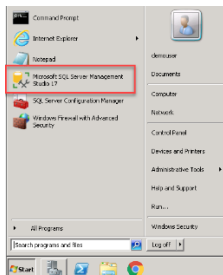
1. Launch Azure Portal and Browse through Virtual Machine
2. Open Virutal Machine named lab-sql-vm



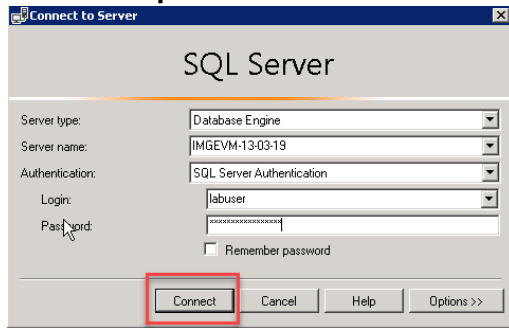
3. Click on Connect and Download RDP File. Launch the RDP file once downloaded.



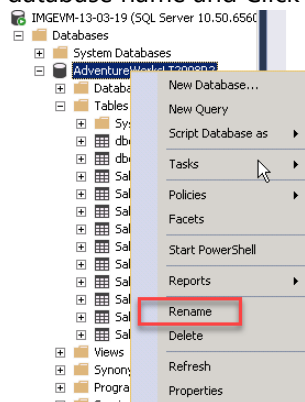
4. Use **demouser** as username as **demopassword1!** as password when connecting.
5. Open SSMS (SQL Server Management Studio) from the SQL Server VM to launch SQL Server 2008 Management application



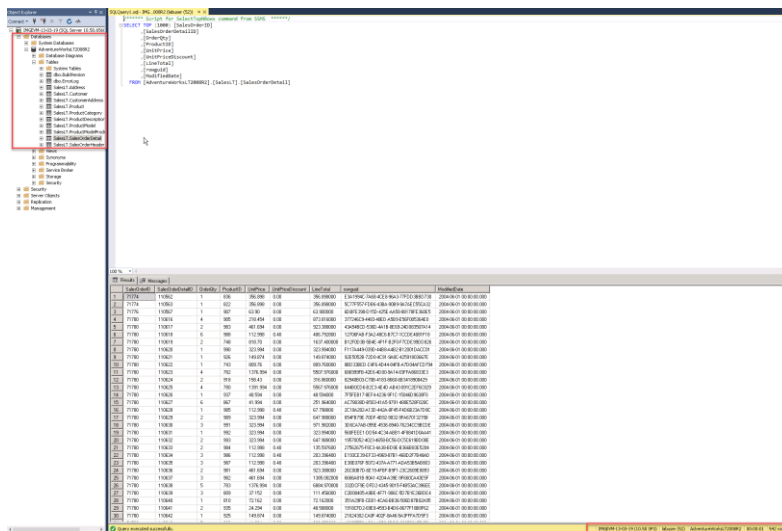
6. On the Connect to Server dialog click the Authentication drop down and choose **SQL Server Authentication**. Leave Server Name as default
7. Enter "labuser" for Login
8. Enter "demopassword1!" for the Password and click **Connect**



9. In SQL Server Management Studio's Object Explorer tree view open the Databases node. You should see a database named **AdventureWorksLT2008R2**. We need to rename this database first to avoid conflict when migrating to MI with other users in the class. Right Click on the database name and Click **Rename**.



10. Add your Name or deploymentID(In Azure Portal, your resource group ends with a number), you can use any of these as suffix to **AdventureWorksLT2008R2** and click **Enter**.
11. Drill down to the SalesLT.SalesOrderDetail table in the object explorer tree by double clicking on Databases, **AdventureWorksLT2008R2**, Tables
12. Right click on SalesLT.SalesOrderDetail and choose Select Top 1000 Rows
13. Make a note of the row count on the bottom right of the results windows.



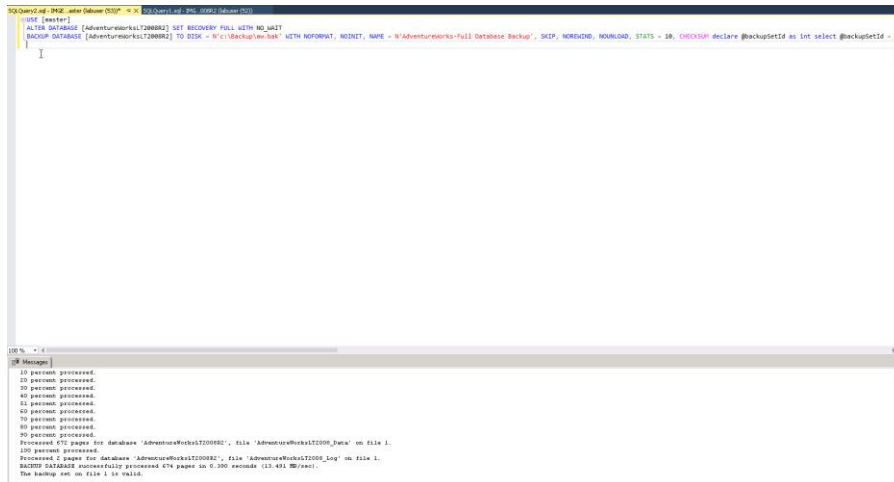
Task 2: Backup the database

Azure Data Migration Service will use the backup file to initialize the target database before starting the process of capturing the ongoing transactions. In this section we will create the backup which contains the schema and data. Azure's Data Migration Service requires that your backup has Perform checksum enabled so we need to make sure that is turned on.

1. In object explorer right click on the database **AdventureWorksLT2008R2**, and select **New Query**
2. In the query window **enter** the following Transact SQL (T-SQL) to create the backup file and press execute

```
USE [master]
ALTER DATABASE [AdventureWorksLT2008R2] SET RECOVERY FULL WITH
NO_WAIT
BACKUP DATABASE [AdventureWorksLT2008R2] TO DISK =
N'c:\Backup\aw.bak' WITH NOFORMAT, NOINIT, NAME =
N'AdventureWorks-Full Database Backup', SKIP, NOREWIND, NOUNLOAD,
STATS = 10, CHECKSUM declare @backupSetId as int select
@backupSetId = position from msdb..backupset where
database_name=N'AdventureWorksLT2008R2' and backup_set_id=(select
max(backup_set_id) from msdb..backupset where
database_name=N'AdventureWorksLT2008R2' ) if @backupSetId is null
begin raiserror(N'Verify failed. Backup information for database
''AdventureWorksLT2008R2'' not found.', 16, 1) end RESTORE
VERIFYONLY FROM DISK = N'c:\Backup\aw.bak' WITH FILE =
@backupSetId, NOUNLOAD, NOREWIND
```

3. Congratulations you have backed up the AdventureWorks database. Next we will run the Data Migration Assistant to check on database compatibility. Backup is stored in C:\Backup\aw.bak



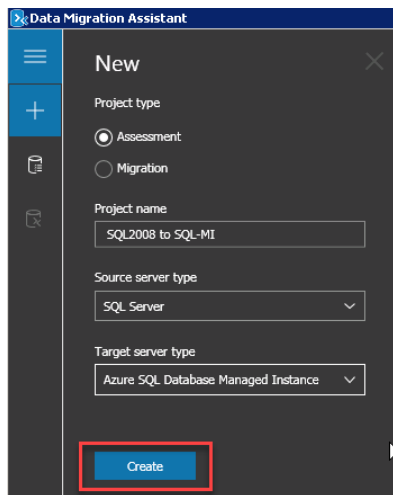
Exercise 2: Check Database Compatibility for Migration

Overview

A best practice is to download and run this Microsoft's Data Migration Assistant in order to see if there are any issues that you may encounter before you start down the path of migration.

Task 1: Check with Microsoft's Data Migration Assistant

1. Minimize the Sql Server Management Studio window to see the Desktop. We will come back to SSMS later.
2. Double click the Microsoft's Data Migration Assistant desktop icon to launch Microsoft's Data Migration Assistant
3. On the left column near the top click the plus "+" sign to start a new project
4. Under Project type Assessment should be selected
5. For Project name enter the following **SQL2008 to SQL-MI**
6. Source server type **SQL Server** should be selected
7. For Target server type click the drop down and select **Azure SQL Database Managed Instance**
8. Click **Create**



- 9.
10. On the next screen ensure Check database compatibility and Check feature parity are selected
11. On the bottom right click **Next**
12. On the right in the Connect to a server blade enter the following for Server name:
localhost
13. For Authentication type click the drop down and select **SQL Server Authentication**
14. For Username enter the following: **labuser**
15. For Password enter the following: **demopassword1!**
16. Ensure both Encrypt connection and Trust server certificate are **checked**
17. At the bottom click **Connect**

Connect to a server X

Connect to a server and select sources

Server name
localhost

Authentication type
SQL Server Authentication

SQL Authentication credentials

Username
labuser

Password
.....

Connection properties

☒ Encrypt connection

☒ Trust server certificate

SQL Server permissions

To run the selected advisor(s), credentials used to connect to a source SQL Server instance must be a member of the sysadmin server role.

18. On the next blade Add sources select **AdventureWorks** and click Add at the bottom

Add sources X

Connect to a server and select sources

☒ localhost

☒ AdventureWorksLT2008R2

19. Click Start Assessment on the bottom right

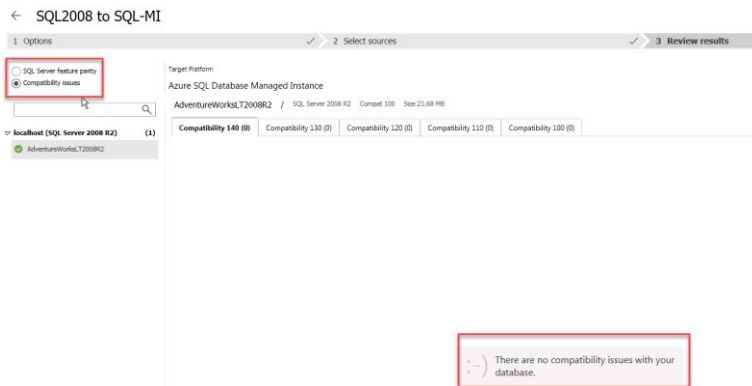
20. You should see the result.

21. On the left under Options you may now click Compatibility issues and should see a similar successful notice

22. Click the X in the upper right to close the Data Migration Assistant application

23. On the pop-up question dialog click Yes to lose all the work

24. Congratulations you have delivered on a best practice.



Exercise 3: Offline Data Migration

Overview

In offline migration mode you need to perform full backup which we did earlier. Configure and run the DMS activity. DMS will take these files from local share, upload it to Azure Storage account, and then restore the database on SQL MI.

Follow these steps to create a DMS migration project and start the migration. This is the bulk of the demo and has a lot of instructions so be sure to keep scrolling down until you are done.

Task 1: Start Migration

Create DMS Project

1. Open the Azure portal browser session you created earlier
2. On the Dashboard tile, select All resources, search **Azure Database Migration Services** and select the resource you have access, to open the Data Management Service
Note: The Overview information shows the Virtual network information. For DMS to work it needs connectivity to both the source and destination databases.
3. You should see a pre-created DMS Service. Open that.

Azure Database Migration Services

Default Directory

[+ Add](#) [Edit columns](#) [Refresh](#) | [Assign tags](#)

Subscriptions: Cloud Labs AI (SS - 02)

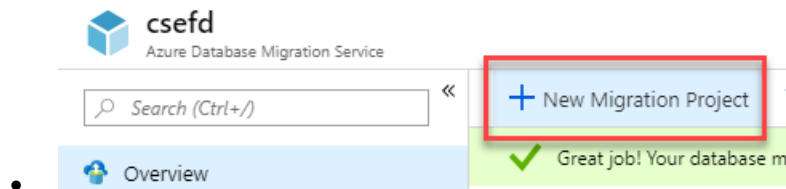
Filter by name...

1 items

☐ NAME ↑↓

☐ csefd

4. On the DMS blade at the top click **+ New Migration Project**
Note: If the button is grayed out, there is also a 'New Migration Project' button toward the middle of the window.



5. On the New migration project blade, for Project name enter SQL-2008-XPRESSMigrate-2008
6. For Source server type select SQL Server
Note: This drop down shows the current list of supported databases. Microsoft will continue to add to this list. Based on the source you choose, the Target server type populates with supported targets.
7. For the Target server type choose **Azure SQL Database Managed Instance**
8. Click on Choose type of activity to review the list of options. Select **Offline data migration**
Note: Different Source and Targets may have different options for activity (example: schema only migration). As Microsoft continues to improve DMS this drop down will have more migration activity options.
9. On the Type of activity blade choose **Save**
10. On the bottom of New migration project blade choose **Create and run** activity
Note: You have just created the DMS project and now the Migration Wizard is being launched.

Migration Source Details

11. On step 1 Select source, in the Migration Source Details blade, in the Source SQL server instance name field enter IP Address/DNS Name of the SQL Server 2008 VM used in Task-1 to connect to SQL Server VM via RDP
12. For Authentication type select **SQL Authentication**
13. For User Name enter **labuser**
14. For Password enter **demopassword1!**
15. Ensure both Encrypt connection and Trust server certificate are selected
16. Click **Save** at the bottom of the pane

Note: DMS will test SQL connectivity to the source server.

Migration source detail □ ×

*

Source SQL Server instance name

?

lab-sql-vmq23uepkoodgza.centralus.clou... ✓

Authentication type

SQL Authentication ▼

*

User Name

?

labuser ✓

Password

..... ✓

Connection properties

☒ Encrypt connection

☒ Trust server certificate

Migration Target Details

17. On step 2, Select target, For Target Server Name, Find the DNS name of managed instance.
On the Dashboard tile, select All resources, search **SQL Managed Instance** and available database managed instance.

SQL managed instances

Default Directory

Add

Reservations

Edit columns

Subscriptions: Cloud Labs AI (SS - 02)

Filter by name...

1 items

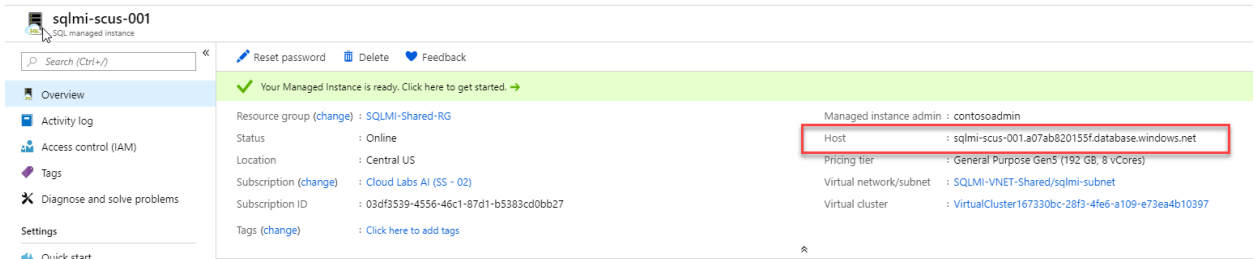
☐

NAME ↑↓

☐

sqlmi-scus-001

18. Click on available managed instance and copy the Hostname.



19. For the Authentication Type, select **SQL Authentication** from the drop down.
20. Provide "**contosoadmin**" as the User Name
21. Provide "**IAE5fAijit0w^rDM**" as the Password
22. Click **Save** at the bottom of this blade

Map to target databases

23. On step 3, Select databases, In the list of SOURCE DATABASE ensure only **AdventureWorks******* is selected
24. Click **Save** at the bottom of this blade

Select Logins

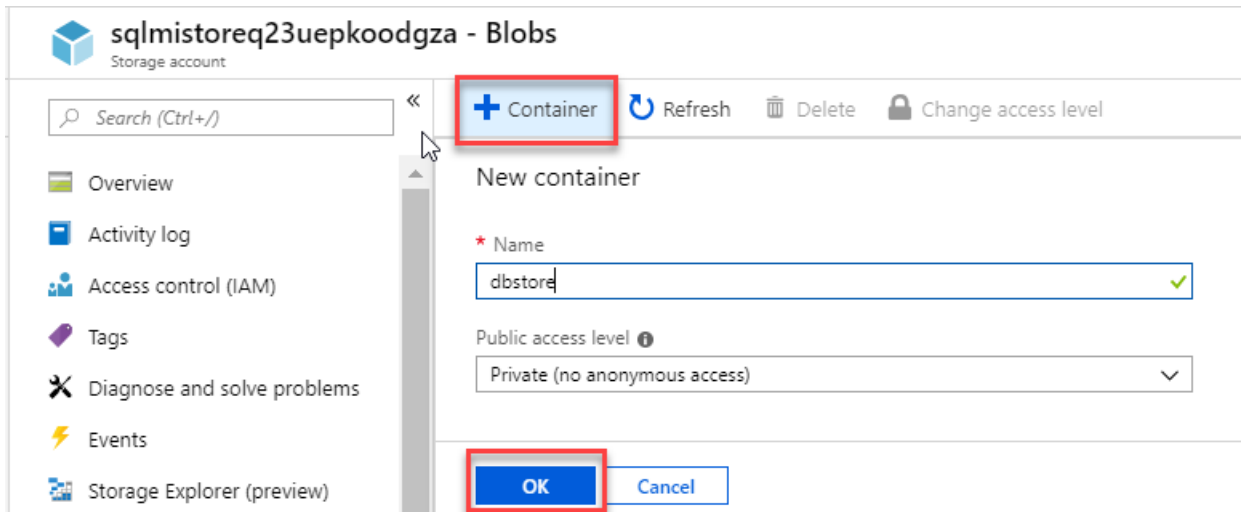
25. Check Source Logins and then click on **Save**

Configure Migration settings

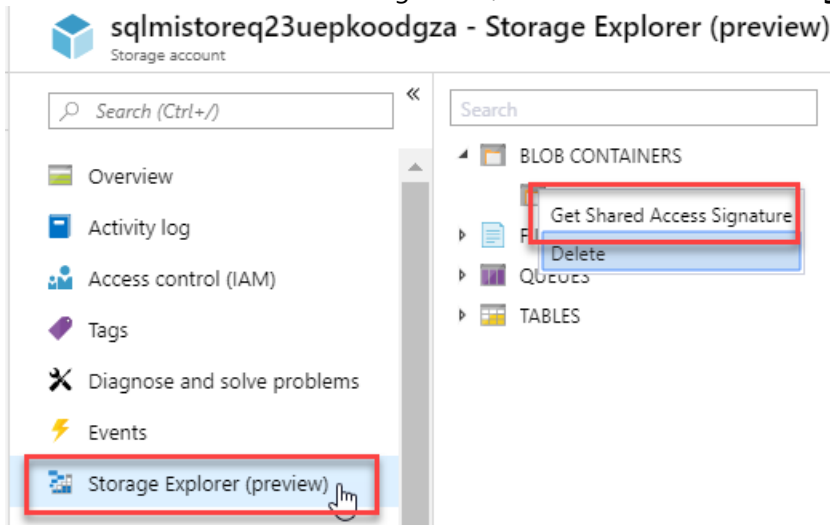
This dialog give DMS the information it needs to access the backup file you created earlier. The location, username and password will be used to access the backup file. The storage account will be used while DMS is performing the migration.

Click on Configure migration settings and enter the following details.

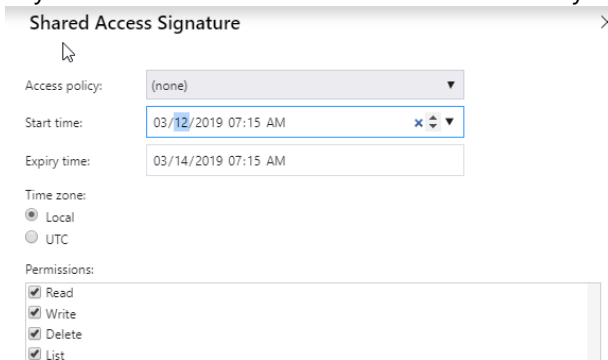
26. Choose source backup options: I will let Azure Database Migration Service create backup files.
27. Network share location that Azure Database Migration Service can take database backups to:
\\{**SQLServerVMDNSName**}\Backup
28. Windows User Azure Database Migration Service impersonates to upload files to Azure Storage:
.\demouser
29. Password: **demopassword1!**
30. Now navigate to Azure Portal in a new **browser Tab**. Select Storage Accounts from the left side and select the storage account with name such as **sqlmistore*******.
31. Click on Blobs
32. Then Create a container in that storage account with name such as **dbstore**.



33. Now, Click on **Storage Explorer**, Expand Blob Containers and right click on the newly created container named **dbstore**. On Right click, Click Get **Shared Access Signature**.



34. Specify Date and Time, Ensure to check all boxes including write and delete. It is advised to take a day before current date as start date to avoid any time zone issues.



35. Copy the SAS URL

Shared Access Signature

Container:

dbstore

URL:

https://sqlmistoreq23uepkoodgza.blob.core.windows.net/dbstore?sp=rl&st=2019-03-11T23:13:00Z&se=2019-03-31T12:13:00Z&sv=2018-03-28&sr=b

Copy

Query string:

?sp=rl&st=2019-03-11T23:13:00Z&se=2019-03-31T12:13:00Z&sv=2018-03-28&sr=b

Copy

36. Paste this URL on the Database migration settings

37. Click on **Save**.

Migration Wizard

SQL-2008-XPRESSMigrate-2008

1

Select source

✓

2

Select target

✓

3

Select databases

✓

4

Select logins

✓

5

Configure migration settings

>

6

Summary

>

Configure migration settings

Choose source backup option

I will let Azure Database Migration Service create backup files.

Backup settings

⚠

Ensure that the service account running the source SQL Server instance has write privileges and the service account running the target SQL Server instance has read privileges on the network share that you provide.

⚠

Make sure the Windows user has full control privilege on the network share that you created above. The Azure Database Migration Service will impersonate the user credential to upload the backup files to Azure storage container for restore operation. (If TDE-enabled databases are selected, the Windows user must be the built-in administrator account and [User Account Control](#) must be disabled for Azure Database Migration Service to upload, copy and delete the certificates files.)

* Network share location that Azure Database Migration Service can take database backups to

\\lab-sql-vmq23uepkoodgza.centralus.cloudapp.azure.com\Backup

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

.\demouser

Password

Storage account settings

⚠

Provide the SAS URI that allows Azure Database Migration Service to access your 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. Use this [link](#) for creating SAS URI, make sure to select all permissions (Read, Write, Delete and List)

* SAS URI for Azure Storage container that Azure Database Migration Service will upload the files to

https://sqlmistoreq23uepkoodgza.blob.core.windows.net/dbstore?sp=rl&st=2019-03-11T23:13:00Z&se=2019-03-31T12:13:00Z&sv=2018-03-28&sr=b

Advanced settings

▼

Migration summary

38. Now enter the following details.

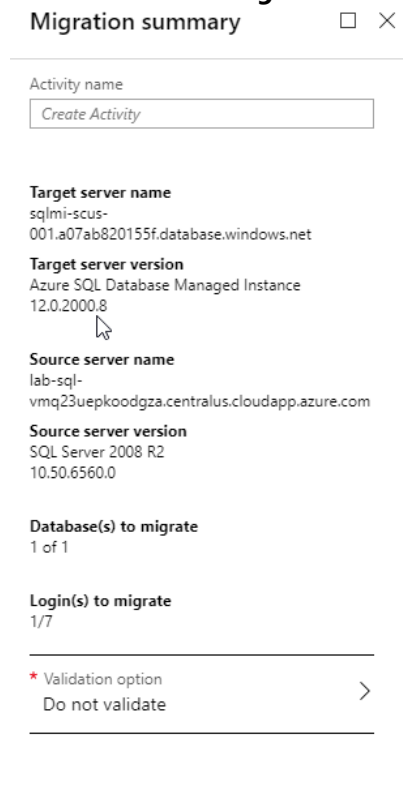
Activity Name: **migration-activity**

Validation option: **Do not validate**

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14

39. Now click on **Run migration**



Migration summary

Activity name
Create Activity

Target server name
sqlmi-scus-001.a07ab820155f.database.windows.net

Target server version
Azure SQL Database Managed Instance
12.0.2000.8

Source server name
lab-sql-vmq23uepkoodgza.centralus.cloudapp.azure.com

Source server version
SQL Server 2008 R2
10.50.6560.0

Database(s) to migrate
1 of 1

Login(s) to migrate
1/7

* Validation option
Do not validate

Congratulations, you have successfully configured and started a migration project.

Task 2: Connect to SQL-MI and Verify

This task will have you connect to the SQL Managed Instance and verify the record count. The will complete the demo. Existing applications will need to point their connections to the Azure SQL Managed Instance database vs. the on-premises database and verify the application is still working.

There are many techniques we can use to make this switch over happen very quickly and mitigate down time that you may want to discuss with the audience.

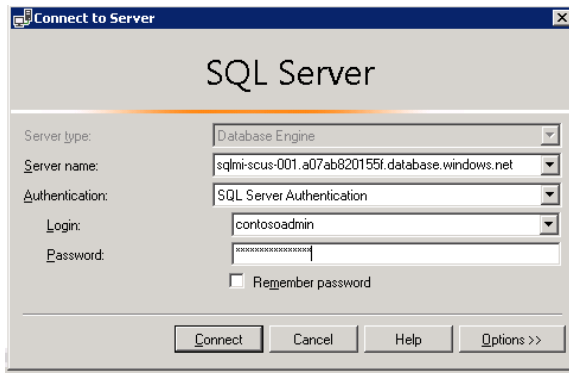
Some discussion topics are:

- * Ensure the connection string is a config value and not hard-coded.
- * Script the changing of the connection string.

These instructions will demonstrate how to connect to the SQL Managed Instance.

1. Go back to the SQL Server Management Studio application in SQL Server 2008 VM. In Object Explorer on the left **click** the **connect** icon
2. In the Connect to Server dialog leave **Server type** as **Database Engine**

3. In Server Name Enter the following **the database managed instance hostname copied earlier.**
4. For Authentication ensure **SQL Server Authentication** is selected
5. Provide "**contosoadmin**" as the User Name
6. Provide "**IAE5fAijit0w^rDM**" as the Password
7. Click **Connect**



Verify Results

Now we will verify that all rows have been copied

8. Under Object Explorer, Expand Databases and Select the database name you migrated.
9. Drill down to the SalesLT.SalesOrderDetail table in the object explorer tree by double clicking on your Database name, **AdventureWorksLT2008R2-yourcustomsuffix**, Tables
10. Right click on SalesLT.SalesOrderDetail and choose Select Top 1000 Rows
11. Make a note of the row count on the bottom right of the results windows.
The total number of records in the result set (bottom right) should match the ones from the source.
Congratulations on a successful migration of SQL Server 2008 to SQL Managed Instance.
12. In Next Step, We'll do online migration. In order to do that, We'll delete the currently migrated DB from Managed Instance to avoid name conflict. Right Click on your Database name **AdventureWorksLT2008R2-yourcustomsuffix** under managed instance and click **Delete**. Be sure not to delete the database from on-premises.

Exercise 4: Online Data Migration

Overview

In online migration mode you need to perform full backup which we did earlier. Configure and run the DMS activity. Then when performing cut over the incremental transaction log backups will be processed. DMS will take these files from local share, upload it to Azure Storage account, and then restore the database on SQL MI - starting from the last full backup, and then applying all incremental transaction log backups.

Task 1: Start Migration

Create DMS Project

1. Open the Azure portal browser session you created earlier
2. On the Dashboard tile, select All resources, search **Azure Database Migration Services** and select the resource you have access, to open the Data Management Service
Note: The Overview information shows the Virtual network information. For DMS to work it needs connectivity to both the source and destination databases.
3. On the DMS blade at the top click + **New Migration Project**
Note: If the button is grayed out, there is also a 'New Migration Project' button toward the middle of the window.
4. On the **New migration project** blade, for Project name enter **Migrate-2008**
5. For Source server type select **SQL Server**
Note: This drop down shows the current list of supported databases. Microsoft will continue to add to this list. Based on the source you choose, the Target server type populates with supported targets.
6. For the Target server type choose **Azure SQL Database Managed Instance**
7. Click on Choose type of activity to review the list of options. Select **Online data migration**

Note: Different Source and Targets may have different options for activity (example: schema only migration). As Microsoft continues to improve DMS this drop down will have more migration activity options.
8. On the Type of activity blade choose **Save**
9. On the bottom of **New migration project** blade choose **Create and run activity**

Note: You have just created the DMS project and now the Migration Wizard is being launched.

Migration Source Details

10. On step 1 Select source, in the Migration Source Details blade, in the Source SQL server instance name field enter IP Address/DNS Name of the SQL Server 2008 VM same way we did earlier.
11. For Authentication type select **SQL Authentication**
12. For User Name enter **labuser**
13. For Password enter **demopassword1!**
14. Ensure both **Encrypt connection** and **Trust server certificate** are selected
15. Click **Save** at the bottom of the pane

Note: DMS will test SQL connectivity to the source server.

Migration Target Details

Live migration to SQL-MI requires an execution context. Azure Active Directory allows you to create Application ID's and key which provide that context. We have prepared one for you to use and added it with reader access to the SQL Managed Instance.

16. For Application ID , Refer to your lab details page/email and copy the Application ID
17. For Key enter Refer to your lab details page/email and copy the Application ID
18. The subscription should be defaulted to your current subscription
19. For Select target Azure SQL Database Managed Instance, select the **managed instance** one listed in the drop down
20. Provide "**contosoadmin**" as the User Name
21. Provide "**IAE5fAijit0w^rDM**" as the Password
22. Click **Save** at the bottom of this blade.

The screenshot shows the 'Migration Wizard' interface. On the left, a list of steps is shown: 1 Select source, 2 Select target, 3 Select databases, 4 Configure migration settings, and 5 Summary. Step 2 is currently selected and highlighted. The right pane, titled 'Migration target details', contains the following fields and values:

- Application ID:** 07578465-0b15-4dee-8837-36429dc87f7
- Key:** [Masked]
- Subscription:** Cloud Labs AI (\$5 - 02)
- Target Azure SQL Database Managed Instance:** sqlmi-scus-001
- SQL User Name:** contosoadmin
- Password:** [Masked]

Note: DMS will now validate connectivity to the target server. These properties are also viewable on the overview pane of the Azure DMS service.

Map to target databases

23. On step 3, Select databases, In the list of SOURCE DATABASE ensure only **AdventureWorks****** is selected

24. Click **Save** at the bottom of this blade

Configure Migration settings

This dialog give DMS the information it needs to access the backup file you created earlier. The location, username and password will be used to access the backup file. The storage account will be used while DMS is performing the migration.

Click on Configure migration settings and enter the following details.

25. Network share location that Azure Database Migration Service can take database backups to:
\\{SQLServer2008VM_DNSName}\Backup
26. Windows User Azure Database Migration Service impersonates to upload files to Azure Storage:
.\demouser
27. Password: **demopassword1!**
28. For subscription use the default which should already be selected for you
29. For Storage account click the drop down and select available storage account name such as **sqlmistore*******
30. On the bottom click **Save**

Migration Wizard × **Configure migration settings**

Migrate-2009

1 Select source ✓

2 Select target ✓

3 Select databases ✓

4 Configure migration settings >

5 Summary >

Backup settings

⚠ Ensure that the service account running the source SQL Server instance has write privileges and the service account running the target SQL Server instance has read privileges on the network share that you provide.

* Network share location that Azure Database Migration Service can take database backups to

\\lab-sql-vmq23uepkoodgza.centralus.cloudapp.azure.com\Backup

⚠ Make sure the Windows user has read access on the network share that you created above. The Azure Database Migration Service will impersonate the user credential to upload the backup files to Azure storage container for restore operation.

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

.\demouser

Password

***** ✓

Storage account settings

* Select the subscription containing the desired storage account

Cloud Labs AI (55 - 02)

ℹ Select a Storage account created in location 'Central US' and configured for standard performance tier that allows Azure Database Migration Service to upload database backup files to and use for migrating databases to a Azure SQL Database Managed Instance. Use this [link](#) to learn more about creating a Storage account

* Storage account that Azure Database Migration Service will upload the files to

sqlmistoreq23uepkoodgza

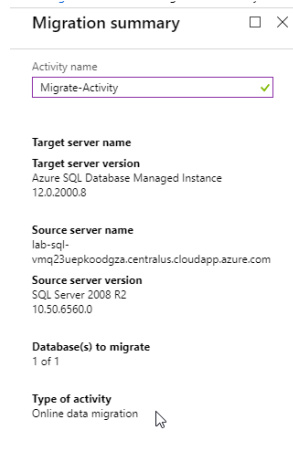
[Advanced settings](#) ▼

Migration summary

31. Now enter the following details.

Activity Name: **Migrate2Azure**

32. Now click on **Run migration** at the bottom of this blade.



Migration summary

Activity name
Migrate-Activity ✓

Target server name
Target server version
Azure SQL Database Managed Instance
12.0.2000.8

Source server name
lab-sql-vmq23uepkoodgze.centralus.cloudapp.azure.com

Source server version
SQL Server 2008 R2
10.50.6560.0

Database(s) to migrate
1 of 1

Type of activity
Online data migration

33. Wait a few seconds then click refresh on the upper left of the blade.

Congratulations, you have successfully configured and started a migration project.

Task 2: Cutting over to Azure [IN PROGRESS]

We have started the execution of the migration job specifically DMS is processing the full backup. You will need to click refresh multiple times as it can take up to a minute for these activities to start. The actual data movement once initialized runs pretty quickly and keeps updating the target with changes based on the transaction logs DMS sees on the share you provided.

We have experienced no downtime up till now. The cut over process will cause a minimal amount of downtime as we drop all connections to the database, process the final transaction log (known as the tail) move them to the cloud.

If the database is isolated from direct access the only switchover is the service tier connection. Any applications that use the old database will need to update their database configuration to point to the new Azure database.

These steps will help you complete the cutover. We will stop the load, put the database into SINGLE_USER mode and backup the last transactions. Since DMS is monitoring that share it will automatically upload the transaction log and apply it to the current database copy on SQL MI.

As soon as the transaction log is processed we will perform the cutover in DMS and the SQL-MI database will become available for read-write.

Monitor Progress

On the activity blade and will need to use the refresh button to monitor the progress

1. Under Database Name, Click on the **AdventureWorks**, to see the details of the migration
2. You can see the database files that have been processed here. Let's start the cutover.

Creating the final transaction Log

We will now backup the transaction log (tail) for the last set of records that have been written to the database. Since this is the final operation for this database we need to ensure there are no other connections to the database. We will accomplish this by setting it to SINGLE_USER mode where our backup will be the only user. Please follow these instructions exactly.

3. In object explorer right click on the database **AdventureWorksLT2008R2** and select **New Query**
4. In the query window enter the following Transact SQL (T-SQL) to create the tail-log backup file and press execute.
- 5.

```
USE [master]
ALTER DATABASE [AdventureWorksLT2008R2] SET SINGLE_USER WITH
ROLLBACK IMMEDIATE; BACKUP LOG [AdventureWorksLT2008R2] TO DISK =
N'C:\Backup\aw-tail.bak' WITH NO_TRUNCATE , NOFORMAT, NOINIT,
NAME = N'AdventureWorks-Full Database Backup', SKIP, NOREWIND,
NOUNLOAD, NORECOVERY , STATS = 10, CHECKSUM declare @backupSetId
as int select @backupSetId = position from msdb..backupset where
database_name=N'AdventureWorks' and backup_set_id=(select
max(backup_set_id) from msdb..backupset where
database_name=N'AdventureWorks' ) if @backupSetId is null begin
raiserror(N'Verify failed. Backup information for database
'AdventureWorksLT2008R2' not found.', 16, 1) end RESTORE
VERIFYONLY FROM DISK = N'C:\Backup\aw-tail.bak' WITH FILE =
@backupSetId, NOUNLOAD, NOREWIND
```

Perform Cutover

6. On the Azure portal at the top left of the **migration activity** blade click **Refresh**
7. Click on database named **AdventureWorksLT2008R2-Suffix**

You should see the new file **aw-tail.bak** show up. We need to wait for its status to be **Restored** before we can start the cut over. This may take up to 5 minutes.

8. Click **Start Cutover** when aw-tail.bak is **Restored**
9. On the Complete cutover check the [**X**] **Confirm** box and click Apply

DMS will now complete the process of cutting over to the Azure database and finish the migration activity. The source database will also be marked as Restoring.

10. Wait until the progress bar at the bottom indicates **Completed**
11. click the **X** at the top right to close the Complete cutover pane

12. On the Migrate2Azure pane click the **X** in the top right of the Migrate2Azure pane to close it

On the **Migrate2Azure** pane the STATUS should be **Completed**

Great job, you have completed the cut over to Azure for your database migration.

Task 3: Connect to SQL-MI and Verify

This task will have you connect to the SQL Managed Instance and verify the record count. The will complete the demo. Existing applications will need to point their connections to the Azure SQL Managed Instance database vs. the on-premises database and verify the application is still working.

There are many techniques we can use to make this switch over happen very quickly and mitigate down time that you may want to discuss with the audience.

Some discussion topics are:

- * Ensure the connection string is a config value and not hard-coded.
- * Script the changing of the connection string.

These instructions will demonstrate how to connect to the SQL Managed Instance.

13. Go back to the SQL Server Management Studio application in SQL Server 2008 VM. In Object Explorer on the left **click** the **connect** icon
14. In the Connect to Server dialog leave **Server type** as **Database Engine**
15. In Server Name Enter the SQL Server MI Hostname used earlier
16. For Authentication ensure **SQL Server Authentication** is selected
17. Provide "**contosoadmin**" as the User Name
18. Provide "**IAE5fAijit0w^rDM**" as the Password
19. Click **Connect**

Verify Results

Now we will verify that all rows have been copied

20. Open the SQL Server Manager Studio application and select the SQL-MI Azure server connection
21. Under Object Explorer, Expand Databases and Select the database name you migrated.
22. Drill down to the SalesLT.SalesOrderDetail table in the object explorer tree by double clicking on your Database name, **AdventureWorksLT2008R2-yourcustomsuffix**, Tables
23. Right click on SalesLT.SalesOrderDetail and choose Select Top 1000 Rows
24. Make a note of the row count on the bottom right of the results windows.
The total number of records in the result set (bottom right) should match the ones from the source.
Congratulations on a successful migration of SQL Server 2008 to SQL Managed Instance.

Exercise 5: Cloud Performance and Security

Overview

Azure not only allows you to run your database in the cloud but Azure's infrastructure brings additional capabilities for customers over running on-premises.

Customers now have:

- Rapid response to scale-up or down their service
 - Immediate benefits in security and performance capabilities
 - Reduced cost and time to implement disaster recovery
 - World wide footprint for growth
 - Additional services like Machine Learning, A.I.
- Task 1: Connect to Azure Portal

Azure has a comprehensive environment for running your Postgres database. This exercise is optional and will show you a few of the benefits of moving your database to Azure.

Azure database features

1. On the Azure portal browser click Dashboard on the left side
2. In the All resources tile click on the Azure SQL Managed Instance resource
3. On the Overview pane you'll see a lot of service monitoring status information
4. Under Security on the left side of the pane click on Advanced Data Security
5. Under Security on the left side of the pane click on Transparent data encryption
Note: you can bring your own key for SQL-MI providing increased level of protection and data ownership

Azure provides a wealth of additional capabilities that you may instantly leverage in order to operate more securely and efficiently.

Great Job!!

Conclusion

Now that we have migrated the database all that remains is to perform standard testing and application cut over.

In this lab you have seen how easy it is to setup and migrate a live database with minimal downtime. Azure DMS makes it easy to migrate to Azure database services. Azure makes it easy to operate securely and improve performance as well as readily leverage the full cloud eco-system for value added services.

[Additional resource links](#) / [Additional Help](#)

- [An excellent SQL-MI technical article](#)
- [SQL Compatibility levels](#)
- [Supported scenarios](#)
- [Tutorial SQL to SQL Managed Instance](#)
- [PowerShell SQL to SQL Managed Instance](#)
- [DMS service sizing](#)