# Database Migration Lab Step-by-step (Using Azure Data Studio)

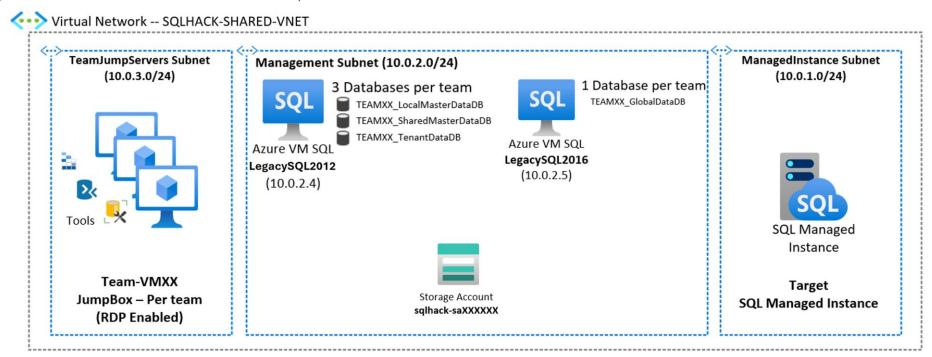
V3.0

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## Migration architecture and Azure components



#### **SQLOAIHACK-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



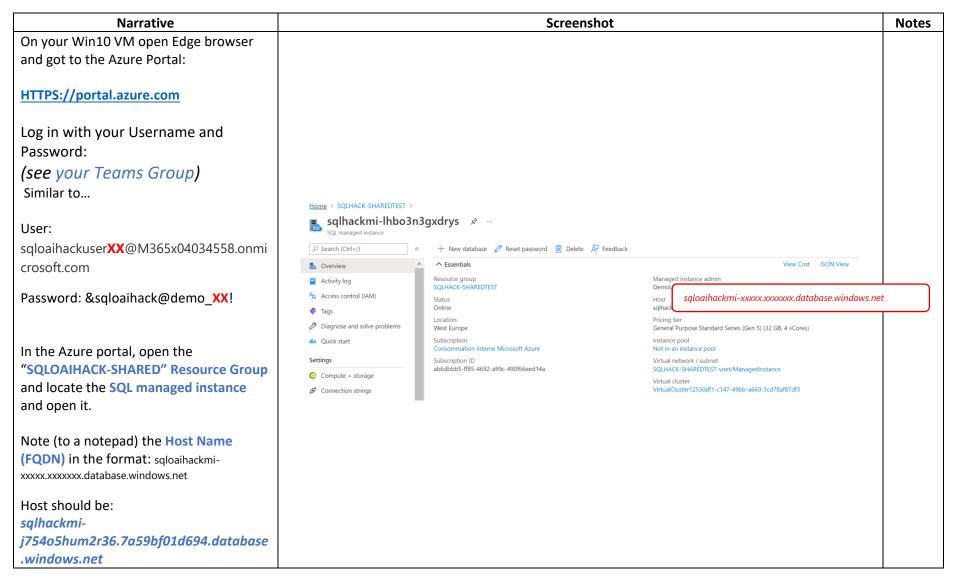
## Generic Migration Content

| Narrative                                     | Notes   |
|---|---|
| Notes for outside of the workshop:            | Azure Database Migration Guide:   |
|   | https://www.microsoft.com/en-us/download/default.aspx   |
| Familiarise yourself with Microsoft migration |   |
| tools and the Azure Database Migration Guide  | DMA & download link:  |
|   | https://docs.microsoft.com/en-us/sql/dma/dma-overview?view=sql-server-ver15                     |
|   | Azure Data Studio and Migration Extension download Links:                                       |
|   | Download and install Azure Data Studio - Azure Data Studio   Microsoft Learn                    |
|   | Azure SQL migration extension for Azure Data Studio - Azure Data Studio   Microsoft Learn       |
|   | Microsoft Migration Portal:   |
|   | https://datamigration.microsoft.com/  |
|   | Identify the right Azure SQL Database, Azure SQL Managed Instance or SQL Server on Azure VM SKU |
|   | for your on-premises database   |
|   | https://docs.microsoft.com/en-us/sql/dma/dma-sku-recommend-sql-db?view=sql-server-ver15         |



## 1. Get the SQL Managed Instance FQDN

In this section we'll connect to the Azure Portal and retrieve SQL MI information: FQDN, ...



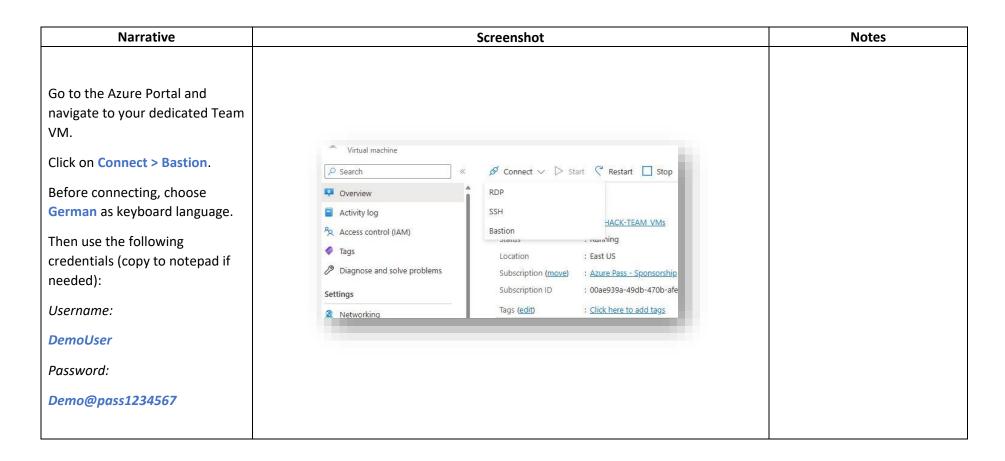


| Azure OpenAl x Databases Hack                                    |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
| All other details from the "DB Migration Lab and Parameters.pdf" |  |  |  |  |  |

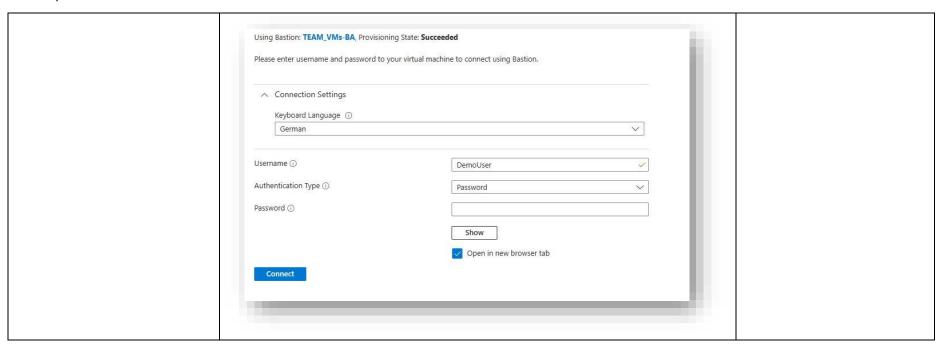


## 2. Assess the application databases for Azure SQL Database suitability using the Database Migration Assistant (DMA)

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



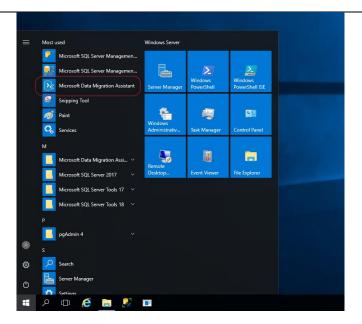




You should have a remote (Bastion) session open to your teams Win10 Management VM.

Now run the **Data Migration Assistant** (DMA) from the Start menus or Desktop icon.

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.

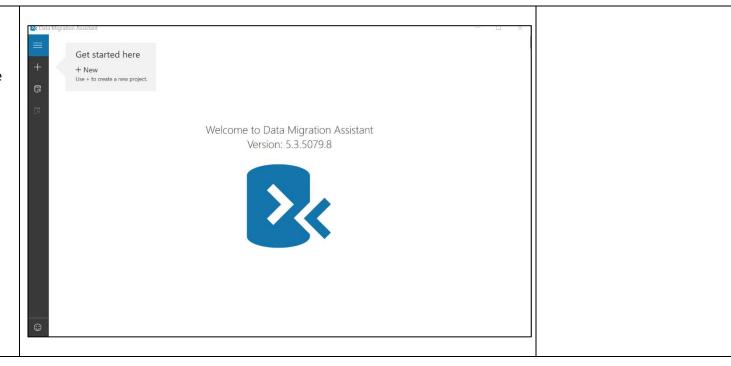


Database Migration Assistant (DMA) is a free download from Microsoft. It can be used to assess a number of database migration & upgrade scenarios not just SQL Server to Azure SQL Database.

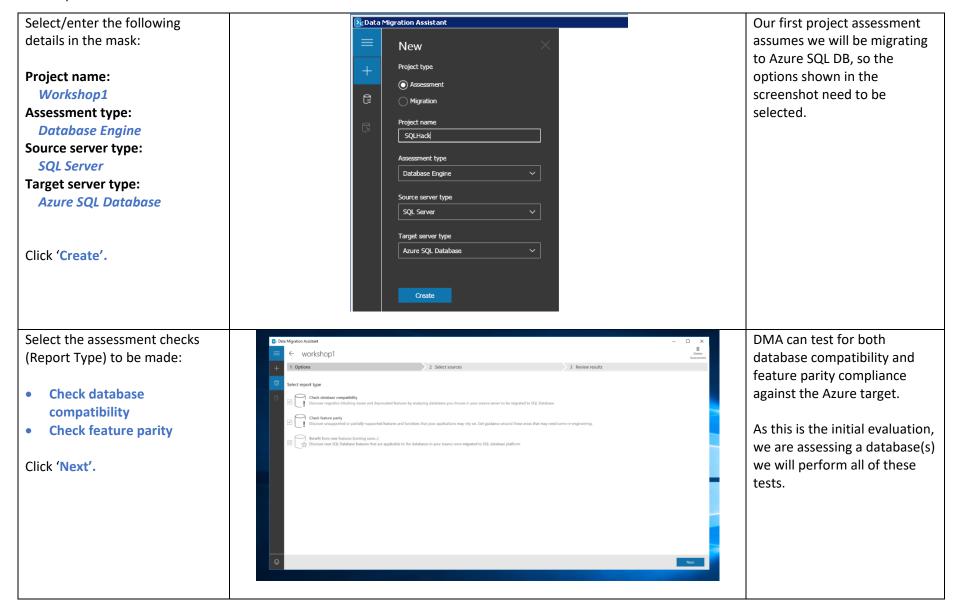


You should see this window open up:

Select the "+" button to create a new assessment project.



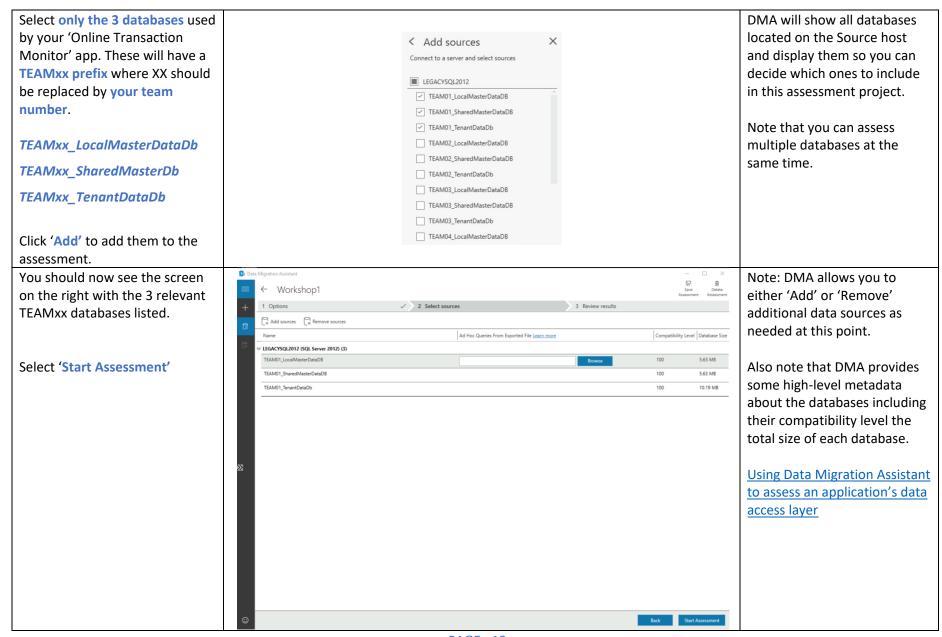






Enter the source/legacy SQL When performing this within details on the right side: your own subscription you will enter the host, authentication and connection types **Server Name:** LEGACYSQL2012 according to your company X Connect to a server guidelines and practices. Connect to a server and select sources Bear in mind that DMA needs **Authentication Type:** to connect to a source SQL **SQL Server Authentication** LEGACYSQL2012 Server using an account that Authentication type belongs to the **sysadmin** role. **NOTE:** Double check that there SQL Server Authentication As this document is produced are no empty spaces in SQL Authentication credentials within a workshop username or password! Username environment Active Directory, Demouse Certificates and encryption Username: Password has not been setup. **Demouser** ••••• Password: Connection properties Demo@pass1234567 Encrypt connection Trust server certificate SQL Server permissions **Untick "Encrypt connection"** 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. Click 'Connect' If you get an error logging in check the Win10 keyboard language







DMA will now show the results of the assessment using 2 separate reports, shown on the left side under "options":

#### 1. Report:

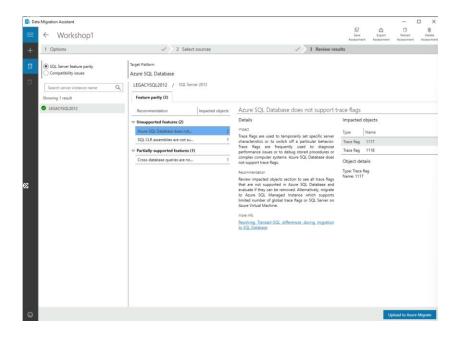
'SQL Server feature parity' which is a server level report highlighting any server settings or components (e.g. MSDTC) that the source DBs are using that isn't supported on the target – in this case Azure SQL Database.

In our assessment there are 'Unsupported" or "Partially Supported" features reported (CLR, cross database queries, several trace flags).

Switch to the 2. Report: 'Compatibility Issues' which is a database level report detailing individual objects that have compatibility issues.

Select 'TEAMxx\_TenantDataDb' on the left side.

Note the 'Migration blockers' and "Breaking Changes" including CLR which the database uses.

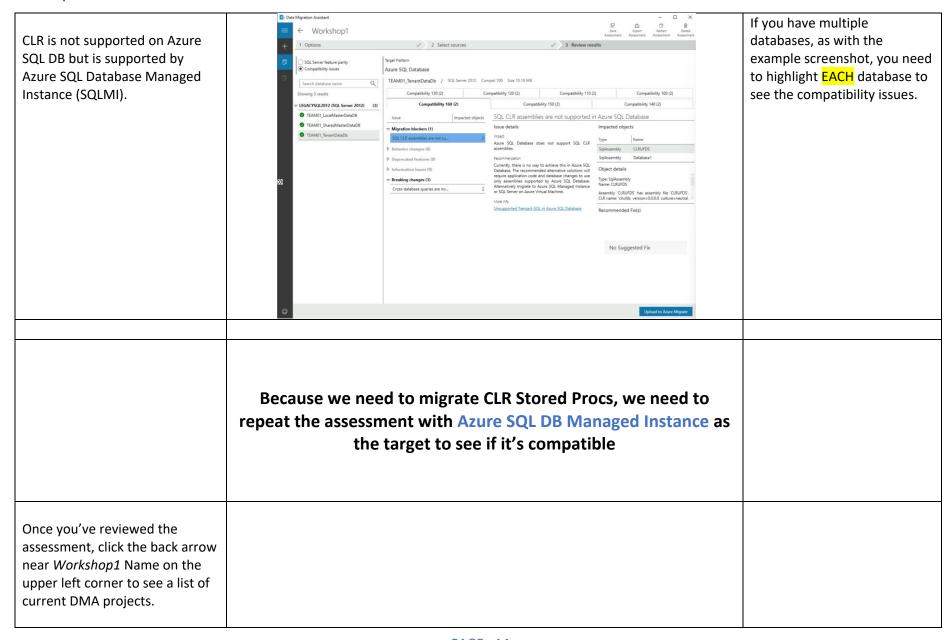


**Note**: Toggle the parity and compatibility issues radio button (top left) to switch between the 2 reports.

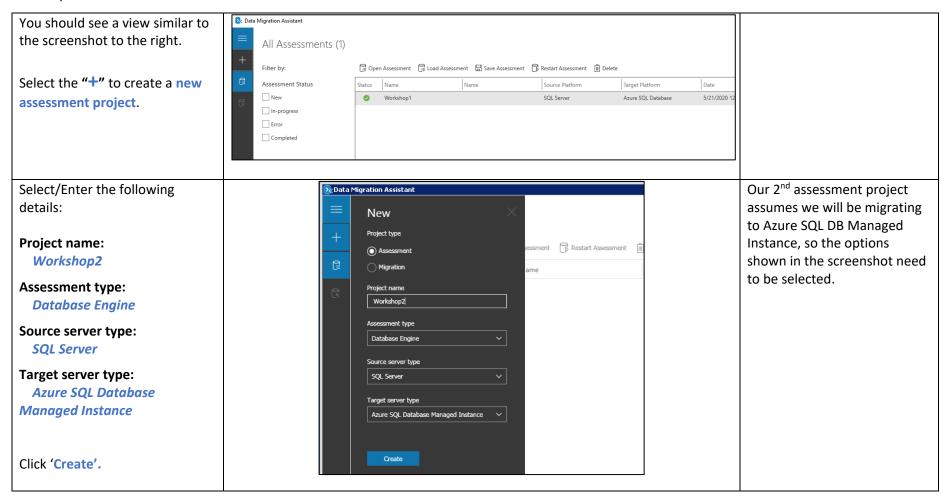
'SQL Server feature parity' shows what features are not supported in the target data source. Under the 'Details' and 'Databases' sections on the right you will find remedial action that are required and the databases impacted.

'Compatibility Issues' shows, over the compatibility tabs, issues that need to be addressed to permit the database(s) to run, in the chosen compatibility level (e.g. 160, 150, 140, 130, 120, 110, 100).

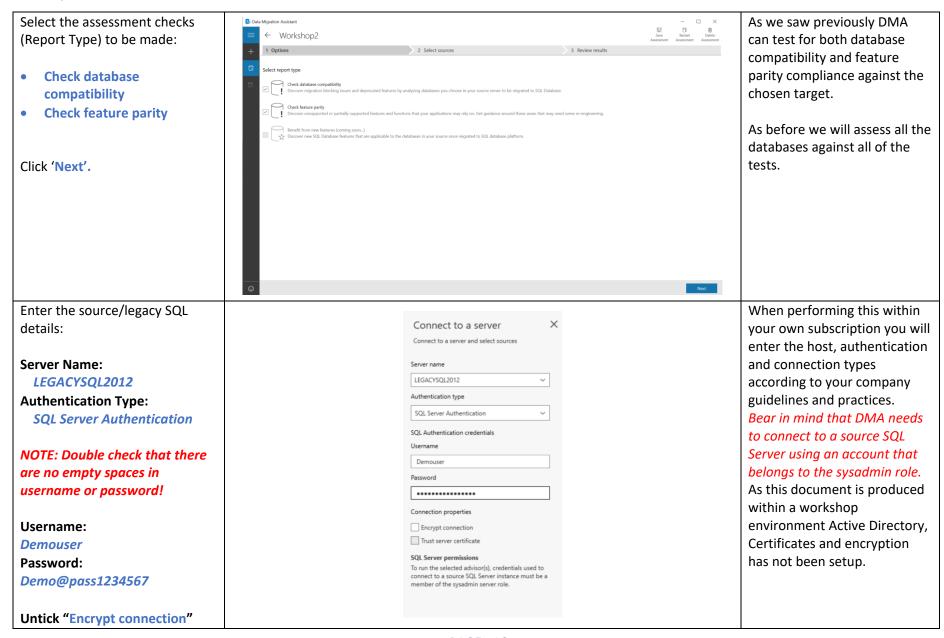




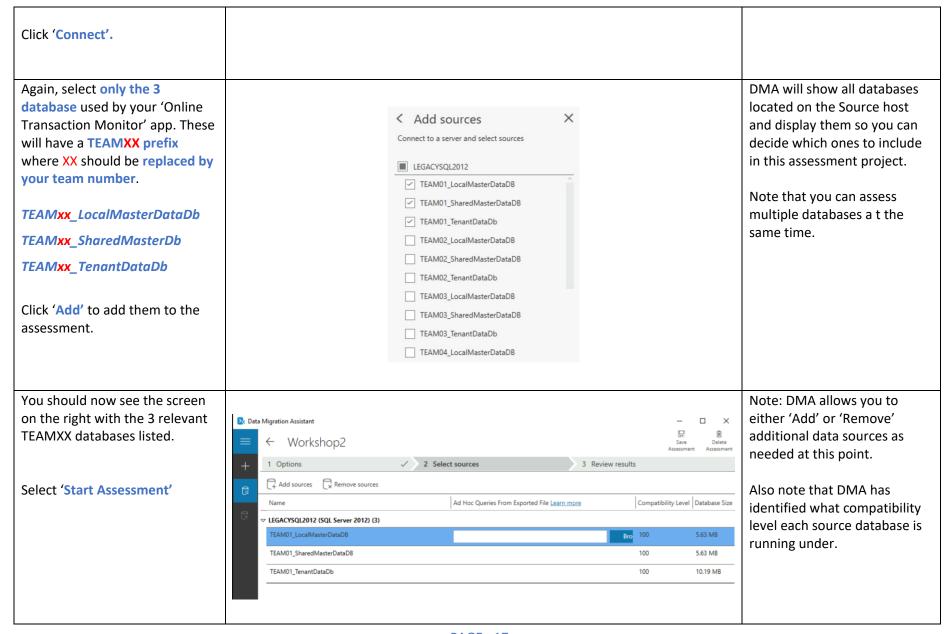




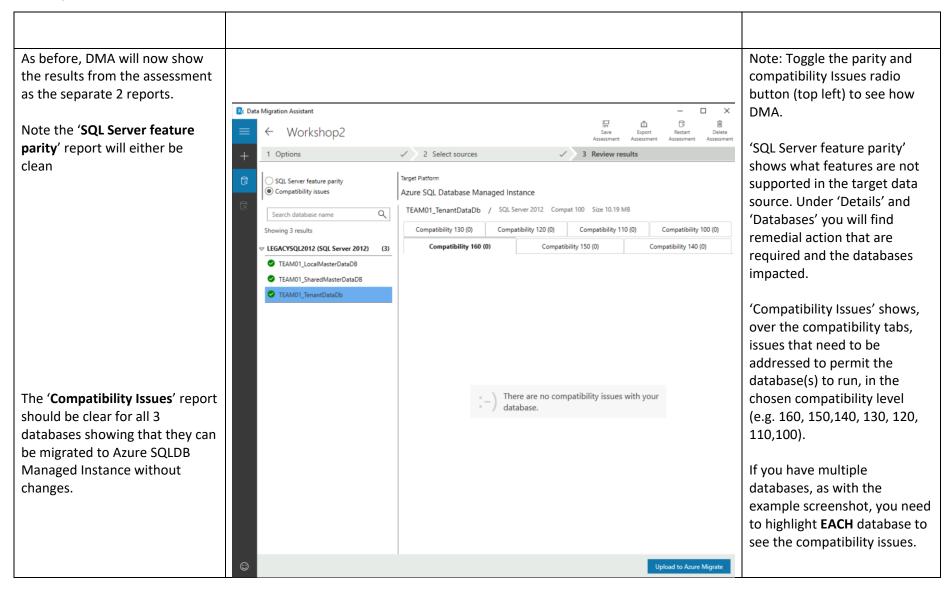










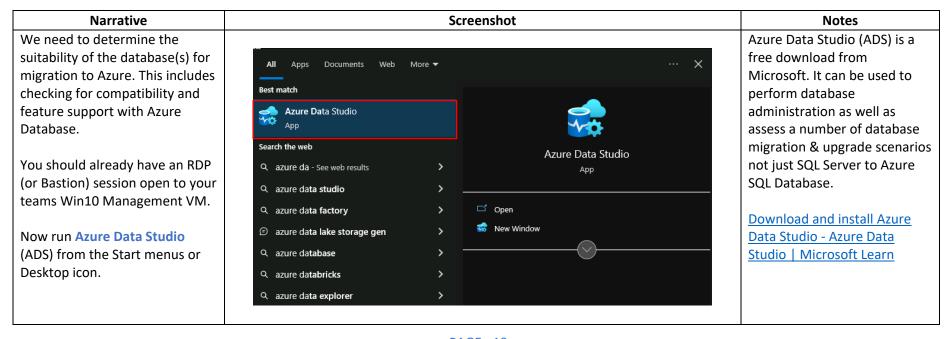




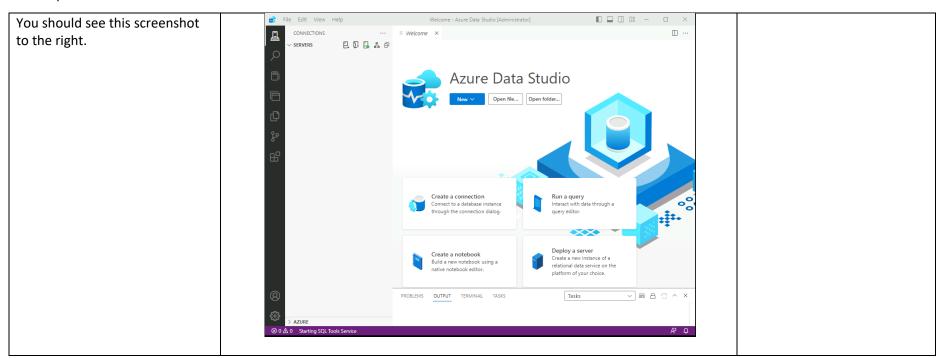
We are now ready to migrate the application databases to Azure SQL Database Managed Instance

3. Migrate the application databases to Azure SQL Database managed instance using the Azure Data Studio (ADS) with migration extension and identify target Azure SQL SKU

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

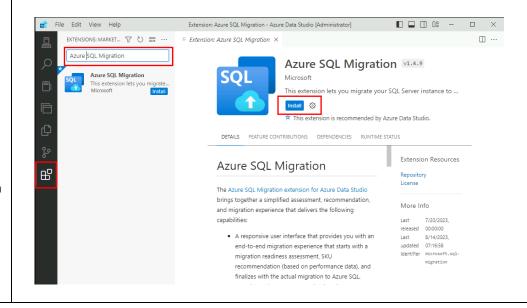






Select "extensions" icon on the bottom left (or press: CTRL + Shift + X) and search for: "Azure SQL migration" in the extension market.
Click Install.

Note: If the extension is not compatible with the ADS version installed, upgrade ADS under Help > Check for Updates.



#### See also:

Azure SQL migration extension for Azure Data Studio - Azure Data Studio | Microsoft Learn

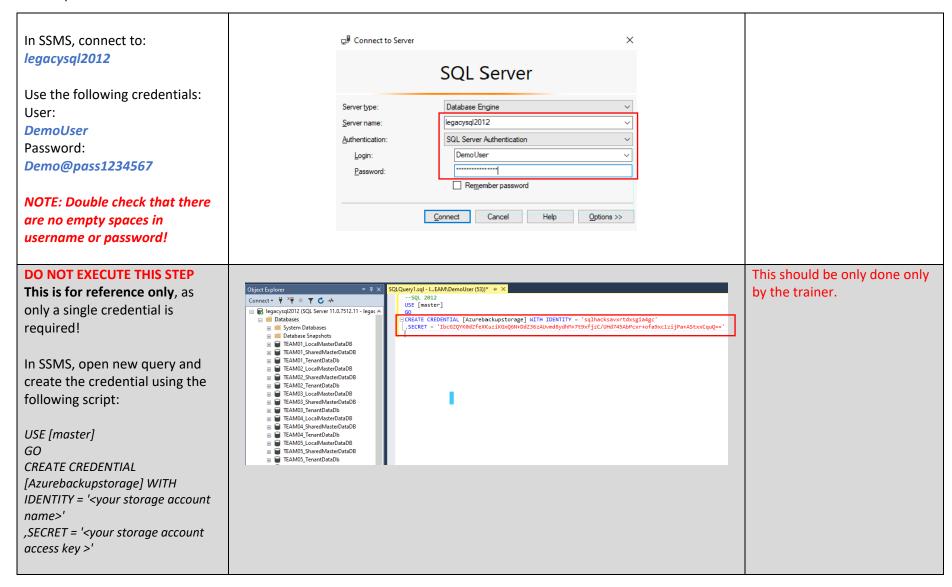


Go back to your **Azure Portal** 🥎 sqlhacksavxrtdxsgia4gc | Access keys 👒 😁 tab, or open your browser and navigate again to: ∠ Search ○ Set rotation reminder ○ Refresh Refresh https://portal.azure.com Overview Access keys authenticate your applications' requests to this storage account. Keep your keys in a secure location Activity log Key Vault, and replace them often with new keys. The two keys allow you to replace one while still using the othe Login in again with the Tags Remember to update the keys with any Azure resources and apps that use this storage account. credential provided at the X Diagnose and solve problems Access Control (IAM) Storage account name beginning. Similar to... 0 sqlhacksavxrtdxsgia4go Data migration User: key1 🚫 Rotate key sqloaihackuserXX@M365x0403 Storage browser Last rotated: 16/08/2023 (13 days ago) 4558.onmicrosoft.com Storage Mover lbcGZQYK0dZfeXKuziKGxQ6N+DdZ36zAUvmd8ydhM+7t9xfjzC/UHd745AbPcxr+... Hide Data storage Password: Containers Show &sqloaihack@demo\_XX! File shares key2 🚫 Rotate key Queues Last rotated: 16/08/2023 (13 days ago) Tables Security + networking Go to the Resource Group Connection string Networking "SQLOAIHACK-SHARED". Front Door and CDN Access keys Select the Azure Storage Shared access signature Account "sqlhack...". sqlhacksaj754o5hum2r36 On the left, click: Access Keys You can note the Key1 in a notepad to reuse it in following steps.



Back in the VM, create a database backup in SSMS: All Apps Documents Settings Photos Web More ▼ Feedback · · · Best match SQL Server Management Studio ₹. **Open SQL Server Management** Management Studio 19 Studio (SSMS) on your Team VM by typing it in the start menu SQL Server Management Studio Management Apps Studio 19 bar. SSMS-Setup-ENU.exe Search the web Ssms - See web results ☐ Open Run as administrator Open file location Unpin from taskbar Pin to Start Uninstall O 🛱 🥷 👼 🕫 🙀 🕏 🗷





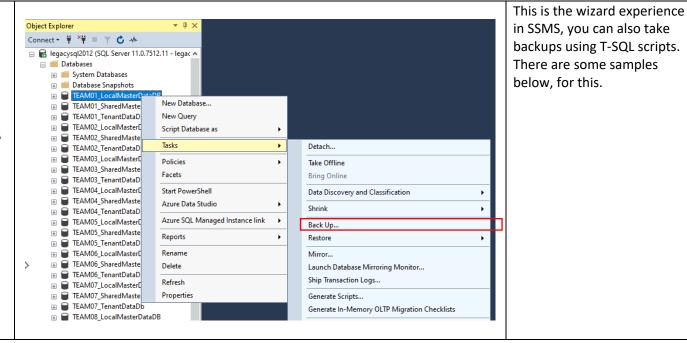




Select your team's 3 databases and create a full back to URL for each database:

- 1) TEAMXX TenantDataDB
- 2) TEAMXX\_LocalMasterDataDB
- 3) TEAMXX\_SharedMasterDataDB

You can do so by right-click on the first database, select tasks > Back Up...





#### Backup database:

- 1) Select Backup to URL
- 2) Select the credential "MigrationContainerCred"
- 3) Make sure you enter the Azure container name as follows:

migration/team<**XX**>\_<datab asename>

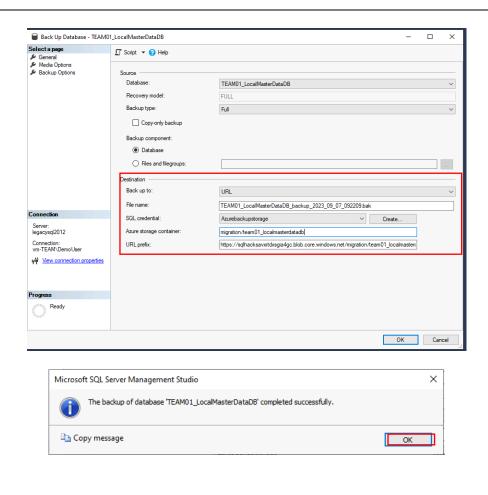
e.g. for team01 migration/team01\_localmast erdatadb

Repeat this process for the remaining 2 databases.

Make sure to name the Azure container name in step 3 according to the databases.

- TEAMXX LocalMasterDataDB
- TEAMXX\_SharedMasterData
   DB
- TEAMXX\_TenantDataDB

Use SSMS like above or use TSQL commands in the right-hand side.



## You can also directly use TSQL to BackUp your Databases:

#### BACKLIP DATABASE

## [TEAM01\_LocalMasterDataDB] TO URL =

N'https://sqlhacksavxrtdxsgia4gc.blob.core.win dows.net/migration/team01\_localmasterdatad b/TEAM01\_LocalMasterDataDB\_backup\_2023\_ 09\_07\_092209.bak'

WITH CREDENTIAL = N'Azurebackupstorage', NOFORMAT, NOINIT, NAME =

N'TEAM01\_LocalMasterDataDB-Full Database Backup', NOSKIP, NOREWIND, NOUNLOAD, STATS = 10

GO

#### BACKUP DATABASE

[TEAM01\_SharedMasterDataDB] TO URL = N'https://sqlhacksavxrtdxsgia4gc.blob.core.win dows.net/migration/team01\_shareddatadb/TEA M01\_SharedMasterDataDB\_backup\_2023\_09\_0 7\_092209.bak'

WITH CREDENTIAL = N'Azurebackupstorage' , NOFORMAT, NOINIT, NAME =

N'TEAM01\_SharedMasterDataDB-Full Database Backup', NOSKIP, NOREWIND, NOUNLOAD, STATS = 10 GO

#### BACKUP DATABASE [TEAM01\_TenantDataDB]

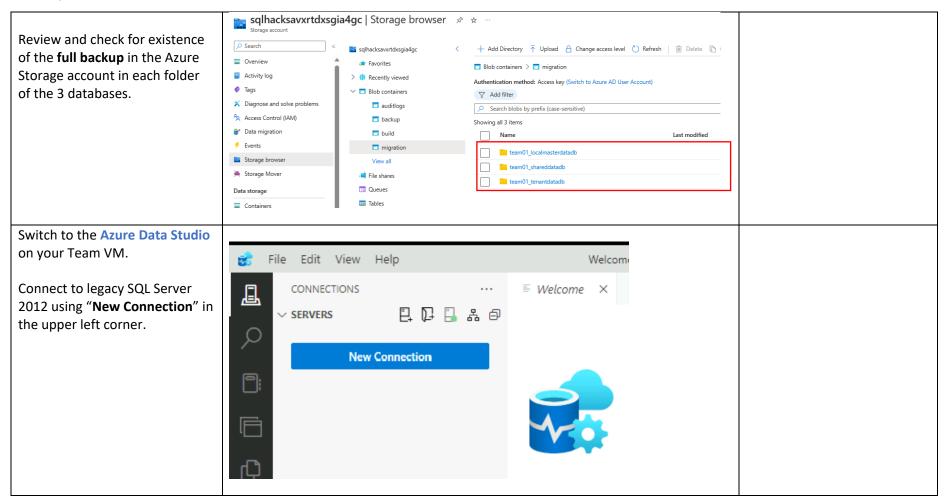
TO URL =
N'https://sqlhacksavxrtdxsgia4gc.blob.core.win

dows.net/migration/team01\_tenantdatadb/TEA M01\_TenantDataDB\_backup\_2023\_09\_07\_092 209.bak'

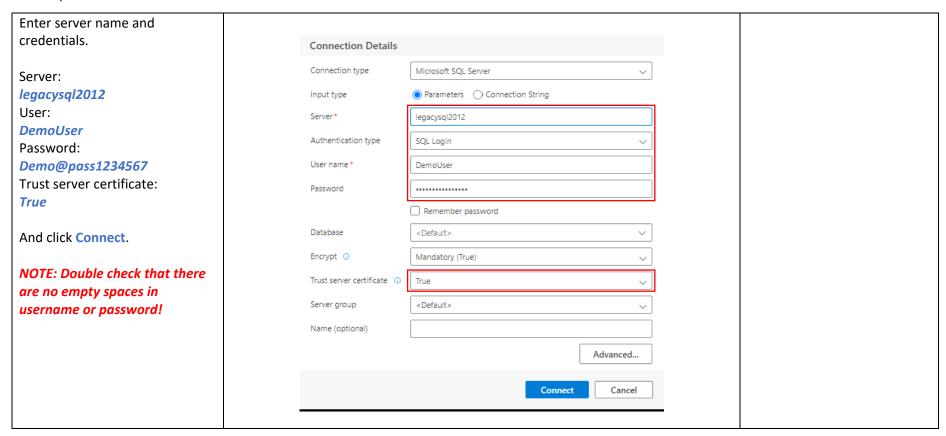
WITH CREDENTIAL = N'Azurebackupstorage', NOFORMAT, NOINIT, NAME = N'TEAMO1\_TenantbataDB-Full Database Backup', NOSKIP, NOREWIND, NOUNLOAD, STATS = 10 GO

Switch to **Azure portal** on your web browser.





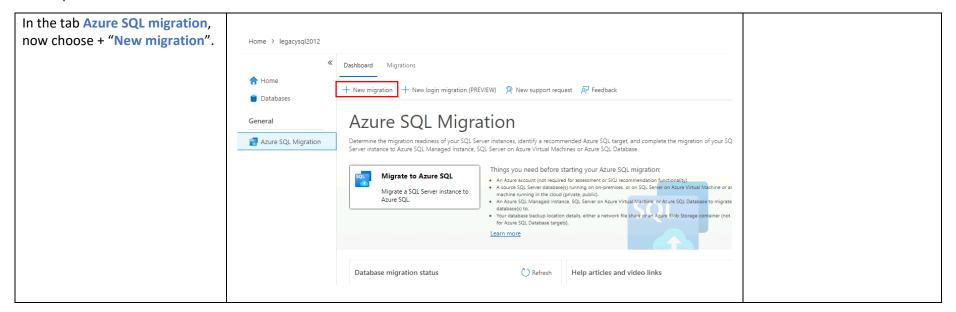




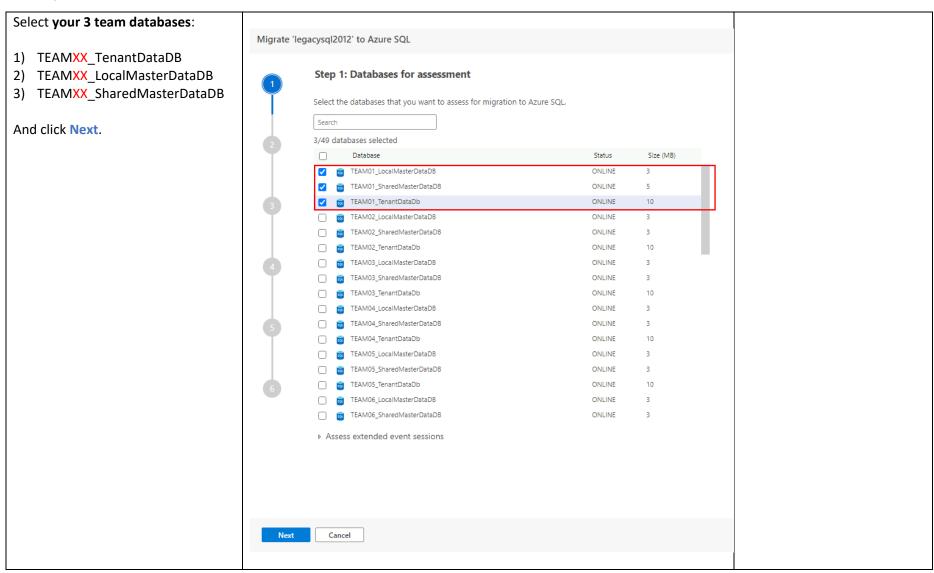


(Optional if you don't see the view yet) File Edit View Help legacysql2012 Right Click on the SQL Server CONNECTIONS Welcome instance legacysql2012 on the P. D B & a ∨ SERVERS left-hand side and select Home > legacysql2012 "Manage". ∨ ■ Databases ≪ ☐ New Query PNew Note > System Databases Version: 11.0.7512.11 A Home ■ TEAM01\_LocalMasterDataDB Computer Name : legacysql2 ■ TEAM01\_SharedMasterDataDB Then click "Azure SQL Databases ■ TEAM01\_TenantDataDb Migration" under General. ■ TEAM02\_LocalMasterDataDB **Backup Status** General ■ TEAM02\_SharedMasterDataDB Last Updated: 10:09:24 AM 9/5/20 ■ TEAM02\_TenantDataDb 🛍 💍 🚰 Azure SQL Migration 0 Within 24hrs ■ TEAM03\_LocalMasterDataDB 1 Older than 24hrs ■ TEAM03\_SharedMasterDataDB 24 No backup found ■ TEAM03\_TenantDataDb







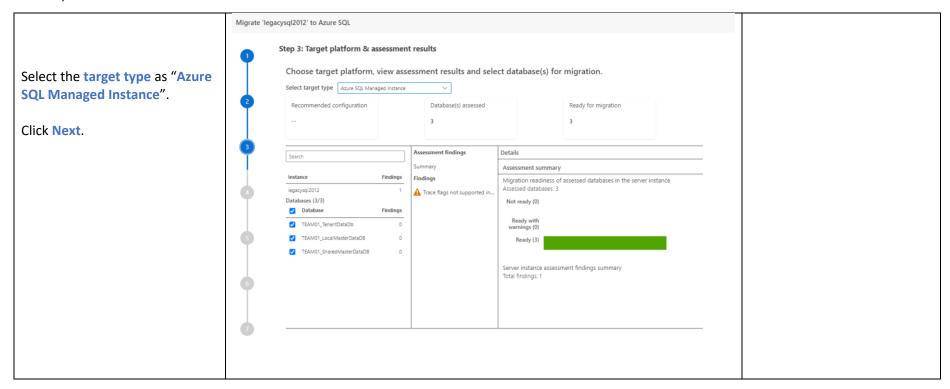




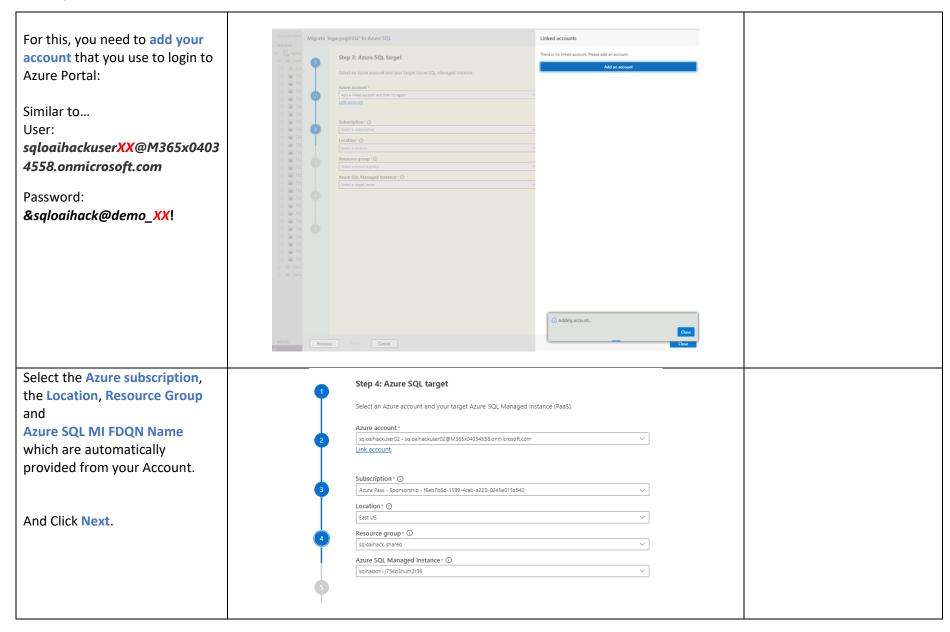
Run assessment and receive Migrate 'legacysql2012' to Azure SQL recommendations. Step 2: Assessment summary and SKU recommendations Click Next. 
 C Refresh Assessment
 ○ Refresh SKU
 ▷ Start data collection
 □ Stop data collection
 ↑ Import performance data
 ⑩ Recommendation parameters
 Check provided We have completed the assessment of your SQL Server instance 'legacysql2012'. recommendations. View assessment summary and SKU recommendations for Azure SQL targets SQL Server on Azure Azure SQL Managed Instance (PaaS) Azure SQL Database Virtual Machine (laaS) ASSESSMENT RESULTS ① ASSESSMENT RESULTS ① ASSESSMENT RESULTS ① (for 3 assessed databases) (for 3 assessed databases) (for 3 assessed databases) Migration readiness Migration readiness Migration readiness Needs review Not ready
O 1 3 0 0

Assessment findings ockers Warnings Blockers Warnings 2 3 0 1 Ready Needs review Not ready 3 0 0 Assessment findings RECOMMENDED CONFIGURATION () RECOMMENDED CONFIGURATION () RECOMMENDED CONFIGURATION ① Azure recommendation is not available. Azure recommendation is not available. Azure recommendation is not available. Click 'Start data collection' button above Click 'Start data collection' button above Click 'Start data collection' button above to get started. to get started. to get started.

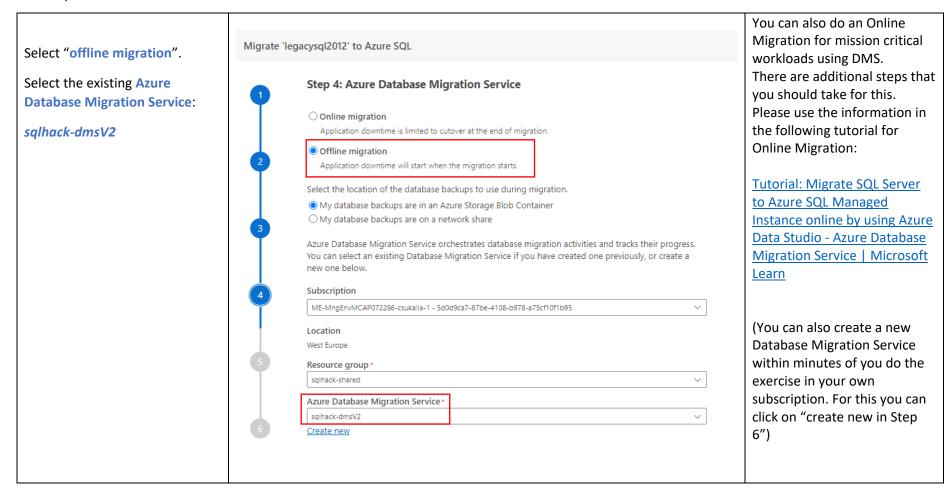














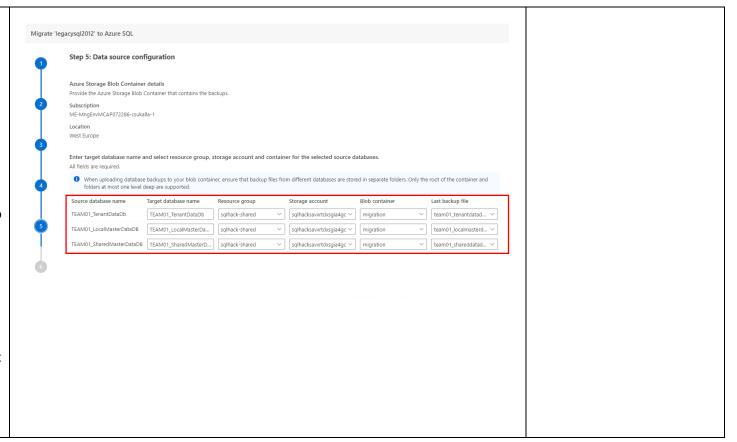
In the data source configuration, change the column "blob container" to "migration" for all 3 databases.

Then select the "last full backup file" from your team for each of the 3 databases.

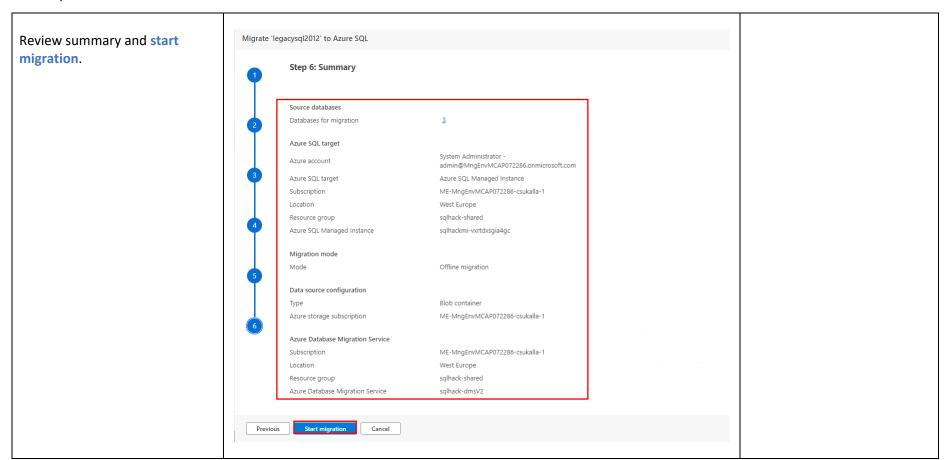
E.g. as shown in the screenshot, the Team01 specific database files were selected. Make sure to check that for the TenantDataDB, the respective tenantdatadb backup file is selected. Same for the LocalMasterDataDB and SharedMasterDataDB.

Check the example in screenshot on the right.

Click Next.







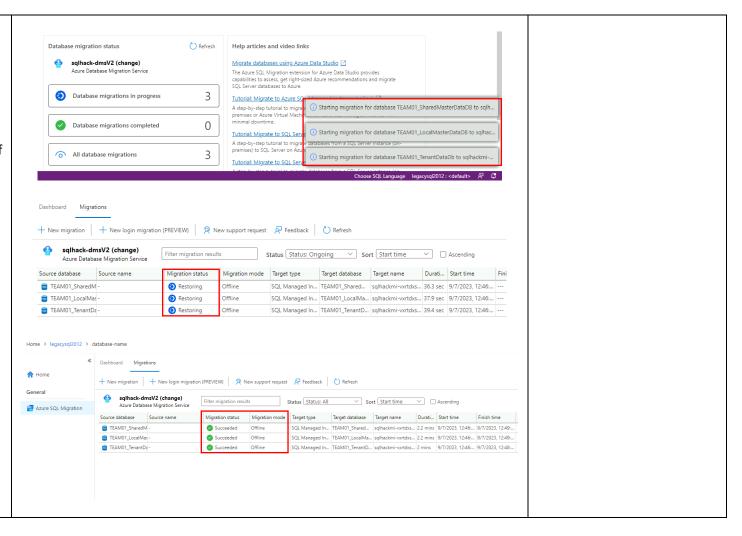


The migration may take some time

Review progress in Azure Data Studio under Azure SQL Migration.

Click on **Refresh** from time to time to check the latest status of the migration until it succeeds.

To check the progress in real time, click on **All Database Migrations** button and monitor the status of the migration process.





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

