



How to Make a Smooth SQL Migration to Microsoft Azure

By Brien M. Posey

Database migrations to the cloud are notorious for introducing a slew of problems.

Over the last several years, public clouds such as Microsoft Azure have been hyped to the point that they have come to be thought of (at least by some) as a cure all for every IT problem imaginable. Although the cloud does hold enormous potential, that potential can only be realised if the cloud based resources are set up properly. Perhaps nowhere is this more true than when it comes to migrating SQL Server databases to the Microsoft Azure cloud.

Although the Microsoft Azure cloud works really well for hosting SQL Server databases, the transition to using a cloud based database is often anything but smooth. In fact, database migrations to the cloud are notorious for introducing a slew of problems.

Such problems can be attributed at least in part to the fact that running SQL Server in the cloud is considerably different from operating a SQL Server in your own datacentre.

TWO OPTIONS

There are two distinct options for hosting SQL databases in the Azure cloud. One option is to run SQL Server inside of an Azure virtual machine. The other option is to use an Azure SQL database. Although these options have similar sounding names, they could not be more different.

Some of the problems that organisations so often experience when migrating SQL Server databases to the cloud are simply the result of operating the database in a different location. For instance, migrating a database to the cloud without also migrating the application that uses the database may introduce latency problems.



Other problems tend to be caused by the fundamental differences between SQL Server and Azure SQL. Unless an organisation's IT staff understand how these two database platforms differ from one another, and the various nuances and technical requirements of each database platform, then the migration is likely to cause problems.

Migrating a SQL Server database to an Azure VM on which SQL Server has been installed is typically the easier of the two options. Without proper planning however, even this option can be problematic. For example, the application that uses the database might reference the database through calls containing hard coded IP addresses. Another example of a potential problem is that database level permissions can break down unless identity federation is working correctly between the on premises environment and the Azure cloud.

VM APPROACH COSTLY

Although migrating databases to an Azure VM that is running SQL Server tends to be the easier of the two options, using the VM approach is not always the best option. Depending on the database and how it is being used, the VM approach may prove to be the more expensive of the two options. Some organisations have also found running SQL Server to be problematic from a patch management and a performance standpoint.

The other option is of course to migrate the database to Azure SQL. Azure SQL is a Platform as a Service (PaaS) database environment that does not require the use of Azure virtual machines. Azure SQL is different from a SQL Server running on an Azure virtual machine in the same way that Azure Active Directory is different from a virtualised domain controller that is running on Azure. If you have ever worked with Azure AD, then you know that it uses different management tools than a Windows Server domain controller, and that it is missing some of the core functionality of a true domain controller. For example, Azure AD does not include a group policy engine. Just as there are major functional differences between a virtualised domain controller and Azure AD, there are equally significant differences between SQL Server and Azure SQL.

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KEY DIFFERENCE IN SQL SERVER OPTIONS

One key difference between the two SQL Server options is that Azure SQL is offered as a service, not as a traditional database server. This means that Microsoft does not provide subscribers with access to the underlying infrastructure. As such, IT pros cannot adjust memory allocations, install supplementary software, or even do something as simple as performing a reboot.

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SQL SERVER VS. AZURE SQL

Another major difference between SQL Server and Azure SQL is that Azure SQL must be managed from the command line. Microsoft did release a browser based query editor for Azure SQL, but Azure SQL does not support the use of more traditional tools such as the SQL Server Management Studio.

These are just two of the nearly fifty differences between SQL Server and Azure SQL. This is not to say that you should avoid Azure SQL, but rather that Azure SQL is very different from the SQL Server platform that you may be used to. The differences between SQL Server and Azure SQL can make migrating from SQL Server to Azure SQL very challenging, especially if you do not fully understand all of the differences between the two platforms. In fact, there are some databases that simply cannot be migrated to Azure SQL due to the database's size or its contents.

AUTOMATED TOOL CONSIDERATIONS

There are of course, automated tools that can help with migrating your data from an on premises SQL Server to Azure SQL. However, there is more to a SQL Server migration than just the data transfer. There is a significant degree of planning and decision making that has to take place before the data transfer ever begins. The automated tools tend to focus solely on the data transfer process without addressing the countless pre or post migration challenges. Addressing these challenges up front is the key to a successful migration.

The Insight Difference Helps Customers with Azure SQL Migrations



Helping customers with Azure SQL migrations since 2014

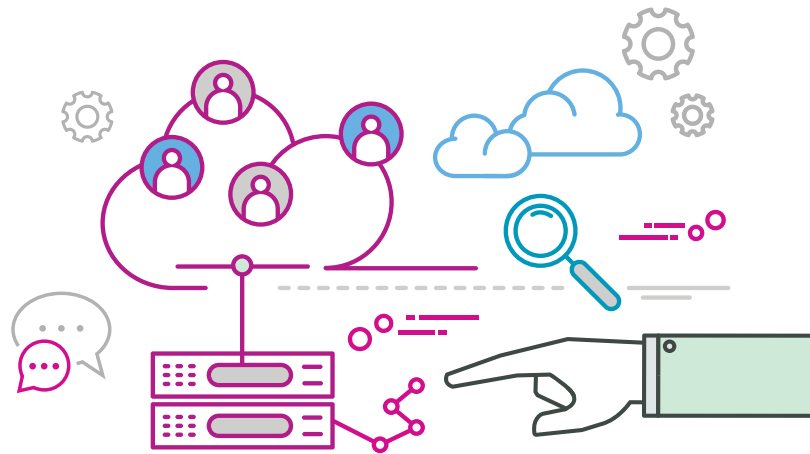
Insight has been helping customers with Azure SQL migrations since 2014, and knows the planning and migration processes inside and out. Although it is possible to perform a migration to Azure SQL by yourself, or to get help from a consultant, Insight brings a level of understanding that can only be achieved by working through numerous real world migrations.

In doing so, we have established that knowledge of Azure SQL alone is not enough. In order for a migration to be successful, those who are performing the migration must also have a deep understanding of related services such as Active Directory, DNS, backups, load balancers, and much more.

Unlike some of the providers in the market, we do not perform generic Azure SQL migrations. Instead, Insight takes the time to meet with its customers, and to understand not only what needs to be migrated, but also the rationale behind the migration. This is important, because each organisation has its own reasons for migrating SQL Server databases to the cloud. An organisation might, for example, decide to migrate a database in an effort to reduce costs, or to improve performance, enhance disaster recovery capabilities, or any number of other reasons. A generic migration may or may not help the organisation to meet the objectives that drove them to performing the migration in the first place. Only by taking the time to understand the reasons for the migration, is it possible to perform the migration in a way that ensures that the migration achieves the desired outcome.

ADDRESSING POTENTIAL PITFALLS

When it comes to SQL migrations, Insight's specialty is finding and addressing any potential pitfalls before beginning the actual migration process. As such, we not only take the time to understand the reason for the migration, but also the data that is being migrated. This is a critically important step, because there are dozens of differences between SQL Server and Azure SQL.



These differences mean that a database may not behave the same way in Azure SQL as it does in SQL Server.

From our experience in performing many migrations, we understand the nuances and potential pitfalls of the migration process. For example, non-English data lurking within a SQL Server database can derail the entire migration process. Likewise, Azure SQL has a very strict database size limit, and that this limit is significantly lower than that of SQL Server.

Once we have thoroughly evaluated our customer's needs and the data that is to be migrated, we develop a statement of work (SOW) for the project. Writing the SOW is an elaborate process that can take weeks to complete, but the process is key to a successful migration. The resulting SOW addresses all of the individual tasks that must be performed, in order for the migration to fully meet our customer's goals.

Nevertheless, our service does not end with the completion of the migration. Insight is able to provide ongoing support for any issues that you may experience later on.

Find out more, visit: www.au.insight.com

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