Guide to SQL Server 2008/2008 R2 End of Life

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CHAPTER ONE

Migration and Compliance in the face of Microsoft SQL Server 2008\2008 R2 EOL

Whether its one version or another, there's hundreds of thousands of companies across the globe using Microsoft SQL Server every day. For one of the most popular versions, SQL Server 2008/2008 R2, service is coming to an end, and it's coming fast. 2019 marks the end of life (EOL) for SQL Server 2008/2008 R2 and for anyone still using either of those versions, there's a lot that needs to be done before it's no longer supported. Thankfully, the Virtual-DBA team at XTIVIA is offering this guide to SQL Server 2008/2008 R2 EOL to help you navigate the changes.

Part One | The End is Here

The end is here for Microsoft's servicing of SQL Server 2008\2008 R2; on **July 9, 2019** Microsoft ended all support for 2008\2008 R2. It may seem unsettling, but there's a lot you can do to prepare your systems in the face of SQL Server 2008/2008 R2 EOL (and increase your database functions and performance at the same time).

More current versions have a lot to offer and migrating to the 2016 or more recent versions will be the best course of action. It isn't just the end of extended support for SQL Server 2008\2008 R2, but also the end of mainstream support for SQL Server 2014, and July 11 is the two year mark for the five year extended support for SQL Server 2012. With the end of mainstream service still a few years out for version of SQL Server 2016 and later, migrating to one of these platforms now will offer support for the next seven to eight years.

SQL Server 2016 and 2017 also have a lot of other features besides their timestamp that promotes migrating to them. SQL Server 2016 was enhanced with a variety of features including Always Encrypted, Dynamic Data Masking, Stretch Database, and other capabilities not found in previous versions. The release of SQL Server 2017 was well-received not only because it can now operate on Linux, but also because of it's Dynamic Management Options (DMOs), wait stats in Query Store, and the Database Graph.

Another reason to switch to versions 2016 or 2017 is that the end of service may render your database non-compliant with regulatory standards. The safety of your information and privacy of your data is vital, and the end of service could potentially put you at risk of losing some of that security. Some of those standards your database may no longer meet include:

- PCI-DSS: credit card transactions
- HIPAA: medical patient privacy
- GLBA: financial institutions
- GDPR: companies who do business in the EU

Fortunately, newer versions of SQL Server offer support in most areas of security compliance. With capabilities to identify, locate, and manage personal data, initiate responses to data breaches, and produce reports for action data subjects requests and documentation. With an interface that's as easy to set up as it is to use, remaining compliant with more current versions of SQL Server is a breeze.

Migrating your entire database might seem like a lot, but the pros far outweigh the cons in light of SQL Server 2008\2008 R2 end of service. From increasing and enhancing numerous features (for exact details on new features, read our blog, "What's New in SQL Server 2017" at www.virtual-dba.com/blog) to ease of regulation and compliance, SQL Server 2016 and later will ultimately provide your business with a safe and efficient database platform.

Over the next few pages, we'll elaborate on exactly what securty and compliance look like in SQL Server 2016/2017 and the perils of failing to migrate. Additionally, we'll run through the history and continued path of SQL Server, what 2017 can offer users, the future of SQL Server (on-prem, cloud, and hybrid options), and SQL Server on AzureSQL/ Azure VM.

CHAPTER TWO

SQL Server EOL and the Pitfalls of Failing to Migrate

Security and compliance are two major issues facing users with service now closed for SQL Server 2008\2008 R2. As mentioned above, since support ended, users no longer have access to security updates to keep their system safe and maintain compliance for data protection regulations. Without critical security updates and vital support, businesses could be subject to severe interruptions, data loss, and failure to meet with industry regulations.

Part One | The Risks

Without the proper security updates companies still using SQL Server 2008\2008 R2 at the end of its service life will be risking the safety of their data, revenue, and potentially their whole business. Each year, billions of data records are stolen by hackers. Now more than ever, security should be at the forefront of any database.

- 20 percent of organizations hacked lose customers during the attack
- 30 percent lose revenue

Along the same lines, continuing to use SQL Server 2008\2008 R2 could lead to compliance issues and failure to meet industry standards and regulations, such as PCI-DSS, HIPPA, and GLBA. A lack of security updates will lead to noncompliance, which will lead to severe business complications including penalties and fines, in some of them up to $4 million. And if your organization does any business in Europe, you need to comply with the new requirements set forth in the GDPR. Fortunately, SQL Server 2016 and up, have improved security features that

Regulations for Protecting Data

are optimized for maintaining compliance with the GDPR and all major data protection regulations.

The complications and penalties of noncompliance are serious factors in running your business; continued use of the older versions of SQL Server will leave your company very vulnerable. They don't have the strong line of defense SQL Server 2016 or SQL Server 2017 have for data identification, protection, management, and documentation. Since service ended, SQL Server 2008\2008 R2 users are defenseless against current and future threats. Their database could be subject to breaches, data at risk of loss or theft, and their business as a whole in jeopardy of noncompliance.

Part Two | Benefits of Migrating

Migrating to SQL Server 2016 and later will not only provide extended functionality and performance but will give you the defenses you need to protect your data and your business. State-of-the-art security controls for encryption and data masking, data assessment, control of personal data use, reporting, and more are all part of the deal.

SQL Server 2016 and later have data protection and regulation woven into the software for the safety of businesses and their customers. Microsoft constantly puts out upgrades for its SQL-based technology to combat all forms of attack and data loss. Automated audits and assessments frequently check for weaknesses, and when they're found, the system responds with a full report and how to fix the problem. It not only saves data but time and worry too.

It is imperative to consider to start migrating your system to a newer version like SQL Server 2016. With the help of an XTIVIA expert, we'll help you upgrade or migrate to SQL Server 2016 (or SQL Server 2017) without losing any data or revenue. Finally, reap the benefits of having a fully optimized SQL Server 2016 database with incredible performance, new functions, and most importantly, advanced security for protection and total compliance.

The following information (courtesy of Microsoft's WS and SQL 2008 EOS Customer Presentation) outlines what newer versions of SQL Server offer users in regard to data identification, security, documentation, and reporting.

DISCOVER Right to Erasure Right to Data Portability	MANAGE Documentation Privacy by Design	PROTECT Data Security Data Transfer	REPORT Documentation Breach Response and Notification
Metadata Queries Helps you search and identify personal data using queries	**Data Governance** Using Windows permissions administration can manage and govern access to personal data	**Transparent Data Encryption** Secure personal data through encryption at the physical storage layer using encrytion-at-rest	**SQL Server Audit** Maintain audit trails
Full Text Queries Using full-text queries against character-based data in SQL Server tables	**Role-based Access Control** Apply role-base access control to help manage authorization policies in the database, and to implement the separation of duties principle	**Always Encrypted** Prevent unauthorized, high, privileged users from accessing data in transit, at rest, and while in use	**Vulnerability Assessment** Reports that can serve as a security assessment for your database. These reports can also be used as part of a Data Protection Impact Assessment (DPIA)
Extended Properties Helping facilitate data classification using the Extended Properties feature to create data classification labels and apply them to sensitive personal data	**Row-level Security** Prevent access to rows in a table (such as those that may contain sensitive information) based on characteristics of the user trying to access the data	**Row-level Security and Data Masking** Protect personal data using Row-Level Security and Dynamic Data Masking features, which limit sensitive data exposure by masking the data to non-privileged users or applications	**SQL Server Audit** Gain useful input for performing a DPIA
SQL Queries and Statements Identify and delete target data	**SQL Server Audit** Verify changes to data that occur in a SQL Server table	**Vulnerability Assessment** Scan databases for insecure configurations, exposed surface area, and additional potential security issues	
		Always On Availability Groups Maximize the availability of a group of user databases for an enterprise	
		SQL Database Threat Detection Get help detecting anomalous database activities indicating potential security threats to the database	
		SQL Server Audit Understand ongoing database activities, and analyze and investigate historical activity to identify potential threats or suspected abuse and security violations	

CHAPTER THREE

Industry-Leading Performance from SQL Server 2016/2017

As service ends for another version of SQL Server, we've been reflecting on the numerous versions of SQL Server that have come to meet the same fate. Looking all the way back to 1989, SQL Server has consistently offered top-of-the-line database performance. Since SQL Server 2000, the platform has optimized database criteria for modern digital enterprise.

Part One | SQL Server History

Over the years, Microsoft has rarely strayed from the path of innovation with SQL Server; every upgrade has come with cutting-edge features for improving database capabilities. Within the last 20 years alone — from SQL Server 2000 to 2017 — we've seen consistent originality and widespread fandom.

Let's take a look at the path of SQL Server since SQL Server 2000 and how the platform has evolved and bent itself to the needs of its users:

- SQL Server 2000: Released with the modern database platform architecture introduced in SQL Server 7.0, SQL Server 2000 presented T-SQL language enhancements and new features like eXtensible Markup Language (XML) and Key Performance Indicators (KPIs).
- SQL Server 2005: This version replaced the old Sybase code of previous versions with the Microsoft code and came with Management Studio and database mirroring for increased availability.
- SQL Server 2008: Aimed to maximize performance and productivity, the 2008 version offered compression, policy-based management, and programmability.
- SQL Server 2008 R2: Integrating powerful Business Intelligence (BI) capabilities, version 2008 R2 came with PowerPivot (In-Memory), SharePoint Integration, and master data services.

- SQL Server 2012: With cloud technology at the forefront of the modern database, 2012 introduced Cloud integration, AlwaysOn availability, Power View, In-Memory ColumnStore, and data quality services.
- SQL Server 2014: Catering to the needs of digital enterprise, 2014 improved cloud options with hybrid-cloud optimization, HDInsight, and Cloud BI. It also included In-Memory across workloads and improved performance and scalability.

This path has lead to some of the biggest advancements in database performance, security, and cloud technology included in SQL Server 2016 and 2017. Introducing significant performance enhancers, end-to-end mobile BI, built-in AI, elaborate language/platform versatility, and simple migration to cloud services; SQL Server 2016/2017 are leading the field in database optimization.

Part Two | New in SQL Server 2016/2017

With service for SQL Server 2008\2008 R2 all wrapped up and over, upgrading to the 2016 and 2017 versions will get you all the state-of-the-art qualities mentioned above. Getting into specifics, here are some of their top features of 2016/2017 that could benefit your business:

- **Always Encrypted**: With Always Encrypted data, access to personal identifiable information (PII) is more secure than ever. Whether at rest or transmitting, the data will be encrypted throughout wire processes.
- **Dynamic Data Masking (DDM)**: DDM is another level of security in SQL Server 2016/2017 and regulation compliance; developers troubleshooting in production environments will only see masked data instead of sensitive PII.
- **Row-level Security**: Row-level security also helps security compliance by restricting row access to only users with specific permissions. Ultimately, it makes your system more secure and reduces the opportunity for hackers to view your sensitive data.
- **Temporal Table**: Using T-SQL syntax, the temporal table automatically stores updates and deletes in history tables for easily creating audit trails and reports.

- **Query Store**: Performance troubleshooting has never been easier (or effective) than with Query Store. Query plan comparisons are simplified and it eliminates the need for a third party system monitor.
- **Stretch Database**: The Stretch database offers companies a way to free up storage on on-prem databases and easily move — and easily access again — stagnant historical data into an Azure environment.
- **PolyBase**: PolyBase uses T-SQL query to procure combined results from Hadoop file storage (or any other file system) and Azure Blob storage simultaneously for users. Instead of importing and processing all the data into SQL Server, the system can just grab it from your storage centers.

Overall, SQL Server 2016/2017 will improve your security, help you stay compliant, and reduce the amount of time your team spends performing tedious tasks. Even if your business is using SQL Server 2008 and EOS isn't a concern of yours, there's no doubt that upgrading to 2016 or 2017 will improve your database functions and business processes.

Between SQL Server 2016 and 2017, there are a few differences — for example, SQL Server 2017 can run on Linux and Docker containers (a big win) — but the features in both are leading the front line in database software, as SQL Server has been known to do.

Whether your company is using SQL Server 2008 or even 2014, there's nothing but benefits for upgrading to 2016 or 2017. Not only are functions and on-prem potential vastly improved, but Microsoft's Azure is another viable option in the face of SQL Server 2008/2008 R2's end of life. The next chapter covers what Azure has to offer.

CHAPTER FOUR

EOL Signals Move to Azure Cloud

With SQL Server 2008\2008 R2's retirement staring you in the face, now is the best time to weigh your options and decide on the next course of action. Do you migrate your SQL Server database to an Azure environment or do you keep an on-premise system and upgrade to SQL Server 2016/2017? Both options provide top-of-the-line features and promote stable transitions to a new, more modern environment. So, how do you choose? It all depends on what you want for your business.

Part One | SQL Server: Cloud or Hybrid?

If you're looking to transform your database into a cloud or hybrid environment, then of course, you'll want to run SQL Server on Azure. You can rearchitect your environment with Windows Server containers and rebuild with Azure data services. Additionally, it doesn't require an immediate upgrade; by migrating to Azure, you can rehost your SQL Server 2008\2008 R2 workloads and receive extended service from Microsoft for security updates.

On the other hand, you might want to maintain an on-premise database, in which case, upgrading to SQL Server 2016/2017 will be the best course of action. Support for SQL Server 2016 will continue through 2026, you'll get a bunch of new features, and you'll be prepared to move into a cloud/hybrid environment whenever the time is right.

It's a lot, and we get that. Luckily, you don't have to jump into migration feet first. With upgrades to on-premise SQL Server systems, the move to the cloud or a hybrid environment doesn't have to be immediate. Your transition into these realms should be well-thought out, planned, and prepared for; with Microsoft Azure, you get that. You get reserved Azure VM instances, which promises SQL Server 2008\2008 R2 updates for up to three years. Similarly, you can buy three years of extended security updates if you don't have a plan by the deadline.

Don't get overwhelmed by SQL Server 2008/2008 R2's end of life; there are ways to plan and guarantee a safe and comfortable transition to better, greener pastures of SQL Server.

Part Two | Why Azure?

Maybe migrating to the cloud isn't where you're confused. Maybe the question you're struggling with is, "which cloud do I migrate to?"

In short, there are two popular options: Azure or Amazon Web Services (AWS). While both are stable environments and offer reserved instances, but Azure offers premium service at less than half the cost. Using a hybrid Azure environment, users get Windows Server with more than three years of Azure reserved instances at 73 percent less than they would with AWS. Thus, for migrating SQL Server to the cloud, Azure not only offers more, but maximizes return on investment (ROI) as well.

Maybe you're not ready to commit to a fully-cloud environment. That's fine! Try a hybrid environment and enjoy the best of both worlds with Windows Server connected to Azure. With familiar tools and Microsoft know-how, you can have an optimized hybrid environment almost immediately. You can run SharePoint, SQL Server, and any other application your enterprise uses on Windows Server VM on Azure. Additionally, you can extend your datacenter into Active Directory, cloud storage, and more features of the Azure cloud. Before you know it, you'll be well-acquainted with operating in the cloud and prepared for total migration if you choose to do so.

Part Three | AzureSQL Database vs. Azure VMs

Microsoft Azure offers two main cloud services; users can either choose to run SQL Server in an infrastructure as a service virtual machine (IaaS VM) or they can deploy their database with the platform as a service (PaaS) AzureSQL Database. There are quite a few differences between the two, but the major one is that Azure VM is an infrastructure as a service (IaaS) and Azure SQL Database is a platform as a service (PaaS). With Azure IaaS VM, it's basically like supporting an on-prem VM: creating, managing, and servicing the VM, operating system, and instance are left to the user. Database functionality as a whole is under your control. With Azure SQL Database, both the infrastructure and database services are provided by the Azure SQL Database. Users don't have to worry about creating VMs or managing operating systems and SQL Server instances.

Choosing between Azure VM and Azure SQL to begin your cloud migration depends on your wants and needs — both offer great capabilities and benefits to your business. If you go with Azure SQL, you'll benefit from the standalone managed database with instance-scoped programming and shared resourcing. If you go with Azure VM, you'll get OS and cloud flexibility, tuned performance, and hybrid connectivity. Both are secure, trusted, and will offer the best return on investment (ROI) for your SQL Server environment.

It might seem overwhelming, but the process of upgrading/migrating doesn't have to be the headache you're expecting. With so many companies rushing to the initiative, Microsoft has presented a detailed path for all SQL Server users (2008\2008 R2 – 2014) to assess their situation, guide them through migration, and fully optimize their system for great results. When you know the why and how of upgrading to SQL Server 2016/2017 and migrating to Azure, you'll realize the benefits and be excited for the opportunity to grow.

If you think you're ready to migrate, reach out to the Virtual-DBA team at XTIVIA. We can help work with you and prepare a plan to make your migration go as smoothly as possible. But the longer you wait, the more you risk. Reach out today!

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