

sql server 2019 licensing guide

****SQL Server 2019 Licensing Guide: Navigating the Essentials****

sql server 2019 licensing guide is an essential read for businesses, IT professionals, and database administrators who want to understand how to effectively manage their SQL Server deployments without overspending or facing compliance issues. Licensing Microsoft's flagship database management system can be complex due to its different editions, licensing models, and usage scenarios. Whether you're planning a new installation, upgrading from an older version, or optimizing your current setup, this guide will unravel the key concepts and help you make informed decisions.

Understanding SQL Server 2019 Editions and Their Licensing Models

One of the first steps in mastering the sql server 2019 licensing guide is recognizing the different editions available and how they are licensed. Microsoft offers multiple editions of SQL Server 2019, each tailored to different organizational needs and workloads.

SQL Server 2019 Editions Overview

- ****Enterprise Edition****: Designed for large organizations requiring high availability, advanced security features, and unlimited virtualization rights.
- ****Standard Edition****: Suitable for mid-tier applications, offering core database capabilities without some of the advanced features found in Enterprise.
- ****Express Edition****: A free, lightweight edition ideal for small applications, development, or learning purposes.
- ****Developer Edition****: Free for development and testing, but not for production use, it contains all the features of Enterprise.

Each edition has different licensing implications that can affect cost and compliance.

Licensing Models Explained

SQL Server 2019 primarily uses two licensing models:

1. ****Per Core Licensing****

This model requires you to license all the cores in the server where SQL

Server is installed. It is mandatory for Enterprise Edition and an option for Standard Edition. Licenses are sold in two-core packs, and there is a minimum requirement of four cores per physical processor. Per-core licensing is ideal for high-performance environments and virtualization scenarios.

2. ****Server + CAL Licensing****

This model allows you to license a physical server and then purchase Client Access Licenses (CALs) for each user or device accessing the server. It is only available for Standard Edition and is a cost-effective choice for smaller organizations with a limited number of users.

Key Factors to Consider When Licensing SQL Server 2019

Getting a clear grasp on what influences SQL Server licensing costs and compliance will save you from unexpected expenses.

Physical vs. Virtual Environments

Licensing SQL Server in virtualized environments requires careful planning. With per-core licensing, if you license all physical cores on the server, you can run any number of virtual machines (VMs) with SQL Server installed on that host without additional licenses. However, if you choose to license individual VMs, you need to license all cores in each VM.

The Enterprise Edition offers unlimited virtualization rights when all physical cores are licensed, which is a significant consideration for data centers heavily invested in virtualization.

High Availability and Disaster Recovery

SQL Server 2019 supports various high availability and disaster recovery solutions such as Always On Availability Groups and Failover Clustering. Licensing for passive secondary servers used purely for failover purposes does not require additional licenses, provided they remain passive and do not serve SQL Server workloads unless failover occurs.

Understanding this subtlety can help organizations optimize costs while maintaining robust disaster recovery strategies.

Licensing Software Assurance Benefits

Software Assurance (SA) is a Microsoft add-on that offers additional benefits like version upgrades, license mobility, and extended support. For SQL Server, SA can be particularly valuable for organizations planning frequent upgrades or migrations to the cloud, as it provides flexibility in license usage and can reduce long-term costs.

Tips for Optimizing SQL Server 2019 Licensing Costs

Licensing can quickly become expensive without a clear strategy. Here are practical tips to help you optimize your investment:

- **Assess Your Workload Needs:** Choose the edition and licensing model that aligns with your current and projected workloads. Avoid over-licensing by purchasing more cores or CALs than necessary.
- **Leverage Virtualization Efficiently:** If using Enterprise Edition, license all physical cores to benefit from unlimited virtualization rights, especially if running multiple VMs.
- **Monitor Usage:** Use SQL Server licensing assessment tools to track active users and devices to ensure your CAL count matches actual usage.
- **Consider Developer Edition for Testing:** Use the free Developer Edition for non-production environments to save costs on development and testing.
- **Plan for Growth:** Anticipate future scaling needs and factor those into your licensing strategy to avoid costly mid-cycle adjustments.

Common Misconceptions About SQL Server 2019 Licensing

Understanding common pitfalls can prevent licensing headaches down the line.

“Server + CAL Licensing is Always Cheaper”

While Server + CAL licensing might seem less expensive upfront, it can become costly as the number of users or devices increases. For large-scale deployments, per-core licensing might offer better scalability and cost predictability.

“Licensing Only the Active Server in a Failover Cluster”

It's important to know that only passive failover servers do not require licenses. If the secondary server handles any workload, it must be appropriately licensed.

“Licensing Cores Means Licensing Physical CPUs Only”

SQL Server licensing focuses on cores, not CPUs. Modern processors often have multiple cores per CPU, and all cores must be licensed regardless of the number of CPUs.

The Impact of Cloud and Hybrid Deployments on Licensing

With the rise of cloud computing, many organizations are adopting hybrid environments or moving entirely to cloud platforms like Microsoft Azure.

Licensing in Azure

When running SQL Server 2019 on Azure Virtual Machines, you can either use a pay-as-you-go model, which includes licensing costs in the VM price, or bring your own licenses through Azure Hybrid Benefit. The latter can provide significant savings if you have existing licenses with Software Assurance.

Hybrid Scenarios

Organizations that maintain on-premises servers while also leveraging cloud resources must understand license mobility rights. Software Assurance enables license mobility, allowing SQL Server licenses to be reassigned between on-premises and cloud environments, providing flexibility and cost savings.

Final Thoughts on Navigating SQL Server 2019 Licensing

Mastering the sql server 2019 licensing guide is less about memorizing rules and more about understanding how those rules apply to your unique

environment. By carefully evaluating your organization's size, workload, virtualization plans, and future growth, you can tailor a licensing strategy that maximizes value and minimizes risk. Staying informed about licensing options, leveraging Software Assurance, and planning for hybrid scenarios will empower you to get the most out of your SQL Server 2019 investment without surprises. Remember, consulting with a licensing expert or Microsoft representative can also provide personalized insights based on your specific needs.

Frequently Asked Questions

What are the main editions of SQL Server 2019 available for licensing?

SQL Server 2019 is primarily available in three editions for licensing: Enterprise, Standard, and Express. The Enterprise edition offers comprehensive high-end capabilities, Standard is designed for mid-tier applications and data marts, and Express is a free edition with basic features for small-scale applications.

How does the core-based licensing model work for SQL Server 2019 Enterprise edition?

The core-based licensing model requires customers to license all physical cores on the server, with a minimum of 4 core licenses per physical processor. This model is suitable for Enterprise edition and allows unlimited virtualization rights depending on the number of core licenses purchased.

Is SQL Server 2019 Standard edition licensed by core or server plus CAL?

SQL Server 2019 Standard edition offers two licensing options: core-based licensing similar to Enterprise edition but without unlimited virtualization rights, or Server + Client Access License (CAL) licensing, where you license the server and purchase CALs for each user or device accessing the server.

What are Client Access Licenses (CALs) and when are they required for SQL Server 2019?

Client Access Licenses (CALs) are licenses that allow users or devices to access SQL Server software. CALs are required only under the Server + CAL licensing model, typically used with the Standard edition. If you use core-based licensing, CALs are not needed.

Can SQL Server 2019 licenses be used in virtualized environments?

Yes, SQL Server 2019 licenses can be used in virtualized environments. With Enterprise edition core-based licensing, you can license all physical cores on the server to run unlimited virtual machines. Standard edition licenses allow limited virtualization rights depending on the number of licenses purchased.

Are there any free licensing options available for SQL Server 2019?

Yes, SQL Server 2019 Express edition is a free version with limitations on database size, memory usage, and compute capacity. It is suitable for lightweight, small-scale applications and development purposes without requiring any license fees.

What factors should be considered when choosing a SQL Server 2019 licensing model?

When choosing a licensing model for SQL Server 2019, consider factors such as the edition required, the number of users or devices accessing the server, whether virtualization is used, hardware configuration (number of cores), and budget. Core-based licensing is preferred for high scalability and virtualization, while Server + CAL may be cost-effective for smaller user bases.

Additional Resources

SQL Server 2019 Licensing Guide: Navigating the Complexities of Enterprise Database Management

sql server 2019 licensing guide serves as an essential resource for IT professionals, database administrators, and business decision-makers seeking clarity on the often complex licensing structures Microsoft employs for its flagship database platform. As enterprises increasingly rely on robust data solutions to drive operations and innovation, understanding the nuances of SQL Server 2019 licensing becomes paramount. This guide delves into the core licensing models, associated costs, and strategic considerations to help organizations optimize their investments while maintaining compliance.

Understanding SQL Server 2019 Licensing Models

Microsoft offers SQL Server 2019 under two primary licensing models: the Core-Based Licensing and the Server + CAL (Client Access License) model. Each

caters to different organizational needs and usage scenarios, making it crucial to assess workload requirements before selecting a licensing option.

Core-Based Licensing Model

The core-based model licenses SQL Server based on the number of physical cores in the server on which the software runs. This approach is particularly suited for environments with high processing demands, such as data centers or cloud-hosted applications.

Under this model:

- Licenses are sold in two-core packs, with a minimum of four cores required per physical processor.
- The licensing cost scales according to the total number of cores utilized, irrespective of the number of users or devices accessing the server.
- It supports unlimited users, making it ideal for public-facing or high-volume applications.

For example, an organization with a server hosting two quad-core processors would need to purchase licenses covering eight cores (4 cores per processor × 2 processors).

Server + CAL Licensing Model

The Server + CAL model is designed for organizations with a known and limited number of users or devices accessing SQL Server. This model requires purchasing a license for the server itself, as well as a CAL for each user or device.

Key points include:

- Server license is required for each server running SQL Server software.
- CALs can be assigned per user or per device, offering flexibility depending on how users access the system.
- This model is often more cost-effective for small to medium-sized businesses with a limited number of users.
- Not suitable for internet-facing applications where the number of users

is unpredictable.

Choosing between per-user or per-device CALs depends on the organization's access patterns. For instance, if users access SQL Server from multiple devices, user CALs are preferable, whereas device CALs suit scenarios with shared workstations.

Special Editions and Licensing Considerations

SQL Server 2019 is available in several editions, each with distinct features and licensing implications. Understanding these differences is crucial in aligning software capabilities with organizational requirements.

Enterprise Edition

The Enterprise Edition is the most comprehensive, designed for mission-critical applications requiring advanced performance, high availability, and security features. Licensing is exclusively core-based for this edition.

Pros:

- Supports unlimited virtualization rights, allowing for unlimited virtual machines per licensed server if all physical cores are licensed.
- Includes advanced features such as in-memory OLTP, data compression, and partitioning.
- Offers enhanced security features like Always Encrypted and Row-Level Security.

Cons:

- Higher cost compared to other editions, which may not be justifiable for smaller deployments.

Standard Edition

The Standard Edition caters to mid-tier applications with moderate database

requirements. It offers a balance between features and cost.

Licensing Options:

- Available under both core-based and Server + CAL licensing models.
- Limits on compute capacity restrict maximum memory and core usage.

While the Standard Edition lacks some advanced features of Enterprise, it supports essential database capabilities like basic high availability and analytics.

Express and Developer Editions

These editions are either free or low-cost options intended for development, testing, or small-scale applications.

- Express Edition is a free version with limitations on database size (10 GB) and compute capacity.
- Developer Edition is free but restricted to non-production environments, offering full Enterprise features for development purposes.

Neither edition requires traditional licensing but has usage restrictions that are important to observe to maintain compliance.

Licensing SQL Server 2019 in Virtualized Environments

Virtualization has become a cornerstone of modern IT infrastructure, and Microsoft's licensing policies reflect this shift. SQL Server 2019 licensing in virtualized scenarios demands careful planning to avoid unnecessary costs or compliance risks.

Licensing Physical Servers vs. Virtual Machines

When SQL Server runs in a virtual machine (VM), the licensing approach depends on whether the organization chooses to license cores in the physical host or license individual VMs.

- Licensing all physical cores on the host server grants unlimited virtualization rights for SQL Server Enterprise Edition, allowing unlimited VMs.
- Alternatively, licensing individual VMs on a per-core basis is possible but may be less cost-efficient for large-scale virtualization.

Benefits of Enterprise Edition in Virtualization

The Enterprise Edition's unlimited virtualization rights are a significant advantage for enterprises deploying multiple SQL Server instances across VMs or containers. This licensing flexibility can lead to substantial cost savings and simplified management in heavily virtualized environments.

Licensing SQL Server in Containers

With the rise of containerization, organizations may deploy SQL Server 2019 in containerized environments. Licensing follows similar principles to virtual machines:

- Core-based licensing applies to the cores allocated to containers.
- Licensing all physical cores on the host allows for unlimited SQL Server containers.

This approach supports modern DevOps workflows but requires precise tracking of core usage to ensure compliance.

Additional Licensing Nuances and Software Assurance Benefits

Beyond the base licensing models, several nuances influence the total cost and value derived from SQL Server 2019 licenses.

Software Assurance (SA)

Software Assurance is a Microsoft subscription that provides license

mobility, version upgrades, and additional support benefits. For SQL Server 2019, SA offers:

- License mobility across servers and data centers, facilitating cloud migrations and load balancing.
- Access to new software versions during the coverage period.
- 24/7 support and training resources.

Organizations with dynamic IT environments often find SA invaluable for maintaining agility and reducing downtime.

Licensing for High Availability and Disaster Recovery

Microsoft permits specific licensing scenarios for passive failover servers used in high availability (HA) and disaster recovery (DR):

- Passive servers used solely for failover do not require additional licenses.
- This applies to both Standard and Enterprise editions, promoting cost-effective HA architectures.

However, if the passive server is actively used for reporting or backups, it must be fully licensed.

Impact of Licensing on Cloud Deployments

SQL Server 2019 is widely deployed in cloud environments, including Microsoft Azure, AWS, and others. Licensing in the cloud introduces additional considerations:

- Cloud providers often offer pay-as-you-go licensing integrated into their pricing models.
- Organizations with existing licenses and Software Assurance may leverage License Mobility to deploy SQL Server on cloud infrastructure.

- Hybrid licensing strategies combining on-premises and cloud deployments require careful management to avoid overlap and ensure compliance.

Strategic Considerations for SQL Server 2019 Licensing

Navigating SQL Server 2019 licensing requires a thorough understanding of organizational needs, infrastructure, and growth plans. Some strategic considerations include:

- **Assessing Workload Type:** High transaction volumes and unpredictable user access favor core-based licensing, whereas fixed user bases might benefit from Server + CAL models.
- **Evaluating Virtualization Needs:** Enterprise Edition's unlimited virtualization rights can reduce costs in virtualized or containerized deployments.
- **Planning for Growth:** Licensing should accommodate future expansion without excessive upfront costs or complexity.
- **Leveraging Software Assurance:** Investing in SA can enhance flexibility and ensure access to the latest features and support.

Decisions made during the licensing procurement phase profoundly impact total cost of ownership and operational agility.

The sql server 2019 licensing guide underscores the importance of aligning licensing choices with technical and business requirements. Given the intricate licensing landscape, organizations are encouraged to engage with Microsoft resellers or licensing specialists to tailor solutions that best fit their environments. This proactive approach ensures compliance, cost-effectiveness, and the full harnessing of SQL Server 2019's powerful database capabilities.

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sql server 2019 licensing guide: SQL Server 2019 Administration Inside Out Randolph West, Melody Zacharias, William Assaf, Sven Aelterman, Louis Davidson, Joseph D'Antoni, 2020-03-11 Conquer SQL Server 2019 administration-from the inside out Dive into SQL Server 2019 administration-and really put your SQL Server DBA expertise to work. This supremely organized reference packs hundreds of timesaving solutions, tips, and workarounds-all you need to plan, implement, manage, and secure SQL Server 2019 in any production environment: on-premises, cloud, or hybrid. Six experts thoroughly tour DBA capabilities available in SQL Server 2019 Database Engine, SQL Server Data Tools, SQL Server Management Studio, PowerShell, and Azure Portal. You'll find extensive new coverage of Azure SQL, big data clusters, PolyBase, data protection, automation, and more. Discover how experts tackle today's essential tasks-and challenge yourself to new levels of mastery. Explore SQL Server 2019's toolset, including the improved SQL Server Management Studio, Azure Data Studio, and Configuration Manager Design, implement, manage, and govern on-premises, hybrid, or Azure database infrastructures Install and configure SQL Server on Windows and Linux Master modern maintenance and monitoring with extended events, Resource Governor, and the SQL Assessment API Automate tasks with maintenance plans, PowerShell, Policy-Based Management, and more Plan and manage data recovery, including hybrid backup/restore, Azure SQL Database recovery, and geo-replication Use availability groups for high availability and disaster recovery Protect data with Transparent Data Encryption, Always Encrypted, new Certificate Management capabilities, and other advances Optimize databases with SQL Server

2019's advanced performance and indexing features Provision and operate Azure SQL Database and its managed instances Move SQL Server workloads to Azure: planning, testing, migration, and post-migration

sql server 2019 licensing guide: *Pro SQL Server 2019 Administration* Peter A. Carter, 2019-10-18 Use this comprehensive guide for the SQL Server DBA, covering all that practicing database administrators need to know to get their daily work done. Updated for SQL Server 2019, this edition includes coverage of new features such as Memory-optimized TempDB Metadata, and Always Encrypted with Secure Enclaves. Other new content includes coverage of Query Store, resumable index operations, installation on Linux, and containerized SQL. Pro SQL Server 2019 Administration takes DBAs on a journey that begins with planning their SQL Server deployment and runs through installing and configuring the instance, administering and optimizing database objects, and ensuring that data is secure and highly available. Finally, readers will learn how to perform advanced maintenance and tuning techniques. This book teaches you to make the most of new SQL Server 2019 functionality, including Data Discovery and Classification. The book promotes best-practice installation, shows how to configure for scalability and high workloads, and demonstrates the gamut of database-level maintenance tasks such as index maintenance, database consistency checks, and table optimizations. What You Will Learn Install and configure SQL Server on Windows through the GUI and with PowerShell Install and configure SQL Server on Linux and in Containers Optimize tables through in-memory OLTP, table partitioning, and the creation of indexes Secure and encrypt data to protect against embarrassing data breaches Ensure 24x7x365 access through high-availability and disaster recovery features Back up your data to ensure against loss, and recover data when needed Perform routine maintenance tasks such as database consistency checks Troubleshoot and solve performance problems in SQL queries and in the database engine Who This Book Is For SQL Server DBAs who manage on-premise installations of SQL Server. This book is also useful for DBAs who wish to learn advanced features such as Query Store, Extended Events, Distributed Replay, and Policy-Based Management, or those who need to install SQL Server in a variety of environments.

sql server 2019 licensing guide: SQL Server on Azure Virtual Machines Joey D'Antoni, Louis Davidson, Allan Hirt, John Martin, Anthony Nocentino, Tim Radney, Randolph West, 2020-06-04 Learn how to combine SQL Server's analytics with Azure's flexibility and hybrid connectivity to achieve industry-leading performance and manageability for your cloud database. Key Features Understand platform availability for SQL Server in Azure Explore the benefits and deployment choices offered by SQL IaaS Get to grips with deploying SQL Server on the Linux development ecosystem Book Description Deploying SQL Server on Azure virtual machines allows you to work on full versions of SQL Server in the cloud without having to maintain on-premises hardware. The book begins by introducing you to the SQL portfolio in Azure and takes you through SQL Server IaaS scenarios, before explaining the factors that you need to consider while choosing an OS for SQL Server in Azure VMs. As you progress through the book, you'll explore different VM options and deployment choices for IaaS and understand platform availability, migration tools, and best practices in Azure. In later chapters, you'll learn how to configure storage to achieve optimized performance. Finally, you'll get to grips with the concept of Azure Hybrid Benefit and find out how you can use it to maximize the value of your existing on-premises SQL Server. By the end of this book, you'll be proficient in administering SQL Server on Microsoft Azure and leveraging the tools required for its deployment. What you will learn Choose an operating system for SQL Server in Azure VMs Use the Azure Management Portal to facilitate the deployment process Verify connectivity and network latency in cloud Configure storage for optimal performance and connectivity Explore various disaster recovery options for SQL Server in Azure Optimize SQL Server on Linux Discover how to back up databases to a URL Who this book is for SQL Server on Azure VMs is for you if you are a developer, data enthusiast, or anyone who wants to migrate SQL Server databases to Azure virtual machines. Basic familiarity with SQL Server and managed identities for Azure resources will be a plus.

sql server 2019 licensing guide: *Microsoft SQL Server Text Book* Manish Soni, 2024-11-13

This book is designed to be your comprehensive companion in your journey to becoming proficient in Microsoft SQL Server Text Book. Whether you are a beginner taking your first steps into the world of SQL databases or an experienced database professional seeking to deepen your knowledge, this book has something to offer you. In today's data-driven world, the importance of managing data efficiently cannot be overstated. Microsoft SQL Server, a robust and versatile database management system, is at the heart of countless applications, powering businesses, industries, and organizations of all sizes. With its rich feature set, scalability, and integration capabilities, SQL Server has become an indispensable tool for database professionals, developers, and administrators. In *Mastering Microsoft SQL*, we have carefully curated a wealth of knowledge, practical insights, and hands-on examples to guide you through the complexities of SQL Server. From understanding the fundamentals of SQL to mastering advanced database administration techniques, this book is structured to help you build a strong foundation and progress to expert-level skills.

sql server 2019 licensing guide: *MC Microsoft Certified Azure Data Fundamentals Study Guide* Jake Switzer, 2022-04-14 The most authoritative and complete study guide for people beginning to work with data in the Azure cloud In *MC Azure Data Fundamentals Study Guide: Exam DP-900*, expert Cloud Solution Architect Jake Switzer delivers a hands-on blueprint to acing the DP-900 Azure data certification. The book prepares you for the test - and for a new career in Azure data analytics, architecture, science, and more - with a laser-focus on the job roles and responsibilities of Azure data professionals. You'll receive a foundational knowledge of core data concepts, like relational and non-relational data and transactional and analytical data workloads, while diving deep into every competency covered on the DP-900 exam. You'll also get: Access to complimentary online study tools, including hundreds of practice exam questions, electronic flashcards, and a searchable glossary Additional prep assistance with access to Sybex's superior interactive online learning environment and test bank Walkthroughs of skills and knowledge that are absolutely necessary for current and aspiring Azure data pros in introductory roles Perfect for anyone just beginning to work with data in the cloud, *MC Azure Data Fundamentals Study Guide: Exam DP-900* is a can't-miss resource for anyone prepping for the DP-900 exam or considering a new career working with Azure data.

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sql server 2019 licensing guide: AWS Certified Solutions Architect Study Guide Ben Piper, David Clinton, 2019-03-01 The AWS Certified Solutions Architect Study Guide: Associate (SAA-C01) Exam is your complete and fully updated resource to the AWS Solutions Architect - Associate certification. This invaluable Sybex study guide covers all relevant aspects of the AWS Solutions Architect job role, including mapping multi-tier architectures to AWS services, loose coupling and stateless systems, applying AWS security features, deploying and managing services, designing large scale distributed systems, and many more. Written by two AWS subject-matter experts, this self-study guide and reference provides all the tools and information necessary to master the exam, earn your certification, and gain insights into the job of an AWS Solutions Architect. Efficient and logical presentation of exam objectives allows for flexible study of topics, and powerful learning tools increase comprehension and retention of key exam elements. Practice questions, chapter reviews, and detailed examination of essential concepts fully prepare you for the AWS Solutions Architect - Associate certification. The certification is highly valued in IT and cloud computing professionals. Now in a new edition—reflecting the latest changes, additions, and updates to the AWS Solutions Architect - Associate certification exam guide—this book is your complete, one-stop resource: Access the Sybex interactive learning environment and test bank, including chapter tests, practice exams, electronic flashcards, and a searchable glossary of key terms. Learn all the components of the AWS exam and know what to expect on exam day Review challenging exam topics and focus on the areas that need improvement Expand your AWS skillset and keep pace with current cloud computing technologies The AWS Certified Solutions Architect Study Guide: Associate (SAA-C01) Exam enables you to validate your skills, increase your competitive advantage, and take the next step on your career path. Comprehensive and up-to-date content and superior study tools make this guide a must-have resource for those seeking AWS Solutions Architect - Associate certification.

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