SQL Server 2005

**Top 10 Features for Development**

| **Feature** | **Description** |
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| **Hosted CommonLanguage Runtime** | With SQL Server 2005 developers can create database objects using familiar languages such as Microsoft Visual C# .NET and Microsoft Visual Basic .NET. Developers can also create two new objects—user-defined types and aggregates. |
| **Native XML Support** | Native XML data can be stored, queried, and indexed in a SQL Server database—allowing developers to build new classes of connected applications around Web services and across any platform or device. |
| **ADO.NET version 2.0** | From new support for SQL Types to Multiple Active Result Sets (MARS), ADO.NET in SQL Server 2005 evolves dataset access and manipulation to achieve greater scalability and flexibility. |
| **Security Enhancements** | The security model in SQL Server 2005 separate users from objects, provides fine-grain access, and enables greater control of data access. Additionally, all system tables are implemented as views, providing more control over database system objects. |
| **Transact-SQL Enhancements** | SQL Server 2005 provides new language capabilities for developing scalable database applications. These enhancements include error handling, recursive query capabilities, relational operator PIVOT, APPLY, ROW\_NUMBER and other row ranking functions, and more. |
| **Reliable Messaging for Asynchronous Applications** | Service Broker is a robust messaging infrastructure that provides reliable transactional delivery of critical messages between servers—with the scalable high-performance that is expected with asynchronous queuing. |
| **Visual Studio Integration** | Tight integration with Microsoft Visual Studio and the .NET Framework streamlines development and debugging of data-driven applications. Developers can build database objects, such as stored procedures, using any .NET language and can seamlessly debug across .NET and Transact-SQL (TSQL) languages. |
| **Web Services** | With SQL Server 2005 developers can develop Web services in the database tier, making SQL Server a hypertext transfer protocol (HTTP) listener and providing a new type of data access capability for Web services-centric applications. |
| **Embedded Reports** | Use client-side reporting controls to embed real-time reports into an application at design time. |
| **Full-Text Search Enhancements** | SQL Server 2005 supports rich, full-text search applications. Cataloging capabilities provide greater flexibility over what is cataloged. Query performance and scalability have been improved dramatically, and new management tools provide greater insight into the full-text implementation. |

**Top 10 Features for Business Intelligence**

| **Feature** | **Description** |
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| **Analysis Services** | With SQL Server 2005 Analysis Services moves into the realm of real- time analytics. From scalability enhancements to deep integration with Microsoft Office, SQL Server 2005 helps extend business intelligence to every level of your business. |
| **Integration Services (SSIS)** | SQL Server Integration Services (SSIS) is a next generation data integration platform that can integrate data from any source. SSIS provides a scalable and extensible platform that empowers development teams to build, manage, and deploy integration solutions to meet unique integration needs. |
| **Data Mining** | Microsoft SQL Server 2005 Analysis Services (SSAS) provides tools for data mining with which you can identify rules and patterns in your data, so that you can determine why things happen and predict what will happen in the future – giving you powerful insight that will help your company make better business decisions. |
| **Reporting Services** | SQL Server Reporting Services is a comprehensive, server-based reporting solution designed to help you author, manage, and deliver both paper-based and interactive Web-based reports. |
| **Clustering Support** | Analysis Services improves availability with support for failover clustering, enhanced multi-instance support, and support for backing up and restoring Analysis Services objects and data. |
| **Key Performance Indicators** | Key performance indicators (KPIs) provide businesses with the capability to define graphic, customizable business metrics to help generate and track key corporate benchmarks. |
| **Scalability and Performance** | Features such as parallel partition processing, creation of remote relational online analytical processing (ROLAP) or hybrid online analytical processing (HOLAP) partitions, distributed partitioned cubes, persisted calculations, and proactive caching greatly improve the scalability and performance of Analysis Services in SQL Server 2005. |
| **Report Builder** | Report Builder is a component of SQL Server 2005 Reporting Services that enables business users to create and deploy reports with a user-friendly enterprise data model. |
| **Proactive Caching** | Proactive Caching combines MOLAP class query performance with real-time data analysis and eliminates the need to maintain OLAP stores. The Proactive Cache transparently synchronizes and maintains an updated copy of the data organized specifically for high-speed querying and for isolating end-users from overloading the relational databases. The structure of the cache is automatically derived from the Universal Data Model (UDM) structure and can be finely tuned to balance performance with latency of data. |
| **Integration with the Microsoft Office System** | Tight integration of SQL Server 2005 with Excel 2007 and Office SharePoint Server 2007 delivers a simple way for information workers to accessing, analyze and collaborate on BI information directly within the tools that they use every day. |

**Top 10 Features for Database Administration**

| **Feature** | **Description** |
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| **Database Mirroring** | Extend log shipping capabilities with the database mirroring solution. You will be able to use database mirroring to enhance availability of your SQL Server systems by setting up automatic failover to a standby server. |
| **Online Restore** | With SQL Server 2005, database administrators are able to perform a restore operation while an instance of SQL Server is running. Online restore improves the availability of SQL Server because only the data being restored is unavailable; the rest of the database remains online and available. |
| **Online Indexing Operations** | The online index option allows concurrent modifications (updates, deletes, and inserts) to the underlying table or clustered index data and any associated indexes during index data definition language (DDL) execution. For example, while a clustered index is being rebuilt, you can continue to make updates to the underlying data and perform queries against the data. |
| **Fast Recovery** | A new faster recovery option improves availability of SQL Server databases. Administrators can reconnect to a recovering database after the transaction log has been rolled forward. |
| **Standards-based Information Access** | Any object, data source, or business intelligence component can be exposed using standards-based protocols such as SOAP and HTTP—eliminating the need for a middle-tier listener, such as IIS, to access a Web services interface that is exposed by SQL Server 2005. |
| **SQL Server Management Studio** | SQL Server 2005 includes SQL Server Management Studio, a new integrated suite of management tools with the functionality to develop, deploy, and troubleshoot SQL Server databases, as well as enhancements to previous functionality. |
| **Dedicated Administrator Connection** | SQL Server 2005 provides a dedicated administrator connection that administrators can use to access a running server even if the server is locked or otherwise unavailable. This capability enables administrators to troubleshoot problems on a server by executing diagnostic functions or Transact-SQL statements. |
| **Snapshot Isolation** | Snapshot Isolation (SI) level is provided at the database level. With SI, users can access the last committed row using a transitionally consistent view of the database. This capability provides greater scalability. |
| **Data Partitioning** | Data partitioning is enhanced with native table and index partitioning that enables efficient manageability of large tables and indexes. |
| **Replication Enhancements** | For distributed databases, SQL Server 2005 provides comprehensive schema change (DDL) replication, next-generation monitoring capabilities, built in replication from Oracle to SQL Server, merge replication over https, and significant merge replication scalability and performance improvements. Additionally, the peer-to-peer transactional replication feature improves support for data scale out using replication. |

**Transact-SQL Enhancements**

CREATE TABLE dbo.DataTable (ColA int PRIMARY KEY, ColB int)

CREATE TABLE dbo.ErrorLog (ColA int, ColB int, error int,

date datetime)

GO

CREATE PROCEDURE dbo.AddData @a int, @b int AS

SET XACT\_ABORT ON

BEGIN TRY

BEGIN TRAN

INSERT INTO dbo.DataTable VALUES (@a, @b)

COMMIT TRAN

END TRY

BEGIN CATCH TRAN\_ABORT

DECLARE @err int

SET @err = @@error --trap the error number

ROLLBACK TRAN

INSERT INTO dbo.ErrorLog VALUES (@a, @b, @err, GETDATE())

END CATCH

GO

EXEC dbo.AddData 1, 1

EXEC dbo.AddData 2, 2

EXEC dbo.AddData 1, 3 --violates the primary key

Sql Server 2000 new features