Session 16

Introduction to SQL Server 2016

High Performance
Mission-Critical OLTP
Always Encrypted
PolyBase
Robust Security
AlwaysOn
Stretch Database
Advanced Analytics

Objectives

- Describe an overview of SQL Server 2016
- Outline the new features of SQL Server 2016
- List and describe the different editions of SQL Server 2016

Introduction

SQL Server 2016

- Latest version of Microsoft's database server

- Brought major change in arenas such as speedy transactions, enhanced security, and hybrid cloud

- AlwaysOn ensures database 100% database up-time

- Enhanced Business Intelligence tools enable business for better data analytics

- Supports data backup on cloud

What is New in SQL Server 2016 1-2

- Enhanced In-Memory
- Always Encrypted
- Advanced Analytics
- Rich Visualizations
- PolyBase Technology
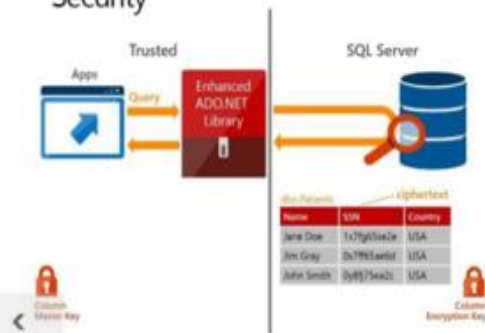- Stretch Database
- AlwaysOn
- Consistent Experience

SQL Server 2016

What is New in SQL Server 2016 2-2
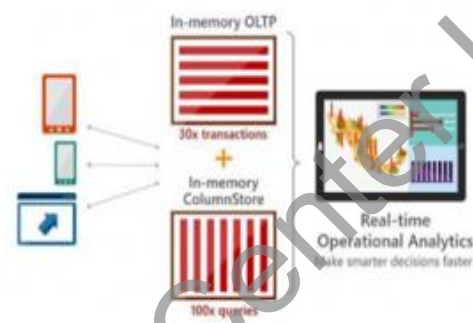
Pictorial representation of key features of SQL Server 2016 :

Evolution of SQL Server 2016

Following figure shows the long journey of the flagship database product of Microsoft from year 2000 to the present:
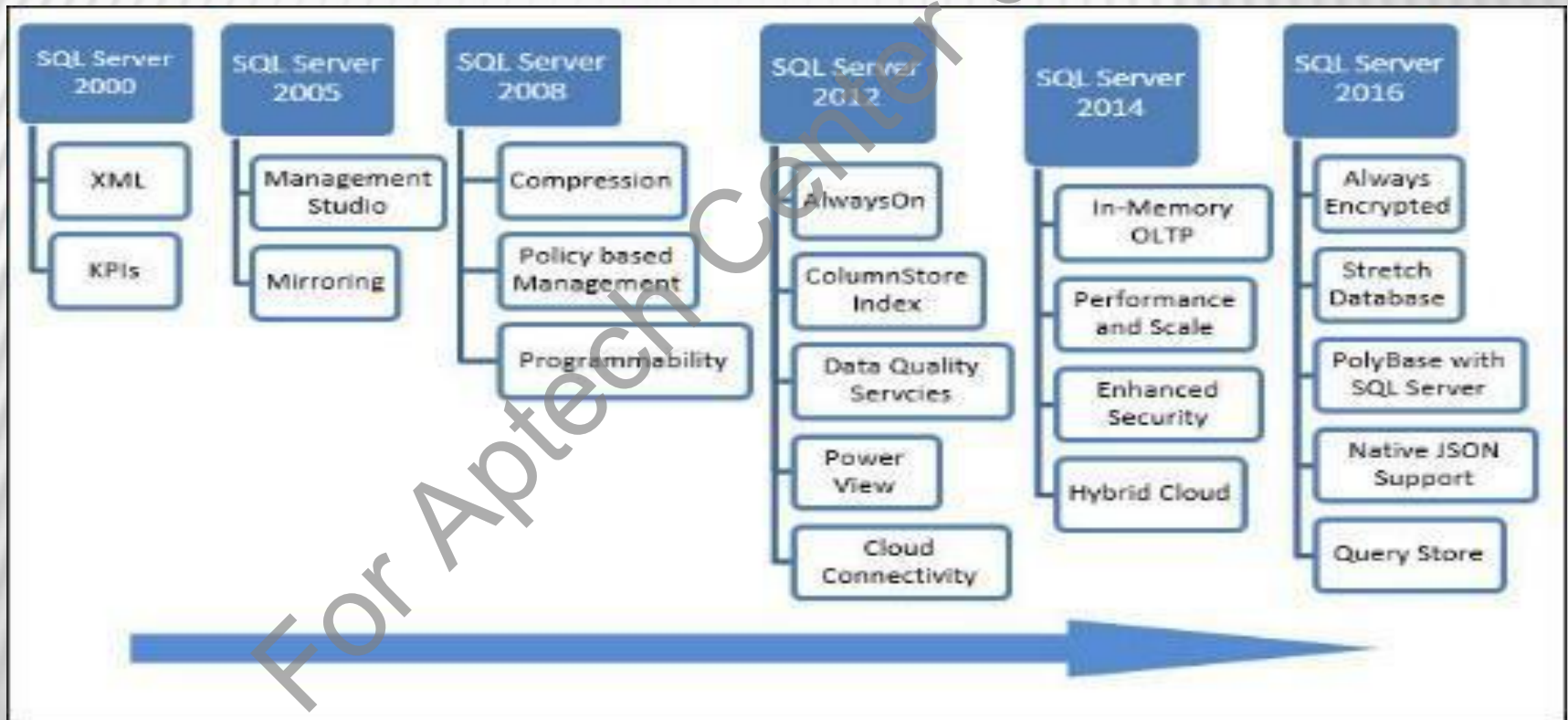
Mission-Critical Performance 1-5

Mission-critical performance is measured basically in terms of four parameters:

Performance

Availability

Scalability

Security

Mission-Critical Performance 2-5

Performance can be achieved through :

Operational Analytics

In-Memory OLTP improvements

Query Data Store

Native JSON

Temporal Tables

Mission-Critical Performance 3-5

Higher Availability can be achieved through enhanced AlwaysOn feature by:

|	
Up to three synchronous reproductions for auto fail-over across domain names	Round-robin method of load balancing of replicas
SQL Server Integration Services (SSIS) and Distributed Transaction Coordinator (DTC) support	Depending on the database health and support for automated failover

Mission-Critical Performance 4-5

Improved Scability can be achieved through:

Enhanced Database Caching
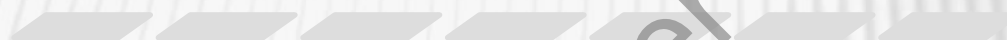
Mission-Critical Performance 5-5

Other than Always Encrypted security feature, the other security upgrades are:

Row Level
Security

Information
Masking

Deeper Insights across Data 1-4

SQL Server 2016 allows more flexibility in terms of data portability.

Access Any Data

PolyBase

Power Query for Analytics and Reporting

Improved SQL Server Integration Services

Deeper Insights across Data 2-4

Scale and Manage

Features of new data management tools:
- Enterprise-grade Analysis Services
- SQL Server Data Tools (SSDT)
- Enhanced Master Data Services (MDS)

Deeper Insights across Data 3-4

Powerful Insights on any Device

SQL Server 2016 provides native apps for Power BI for Android, Windows, and iOS. Features are:

- Mobile Business Intelligence (BI)
- Query for reporting and Analytics

Deeper Insights across Data 4-4

Built-in Advanced Analytics at Massive Scale

- R algorithms can be directly executed on SQL Server through advanced analytics
- R is a widely popular open-source programming language

R Enables		
Advanced analytics	Data exploration	Machine learning

- R Services integrates a unique R distribution into the SQL Server platform
- R Services enables to create easily deployable, intelligent, and predictive applications

Hyper Scale Cloud

Architecture of SQL Server 2016 enables the user to work smoothly with the cloud in a hybrid environment, in which data and services reside in different locations. This is achieved through:

Uniformity

Breakthrough Hybrid Situations

Ease
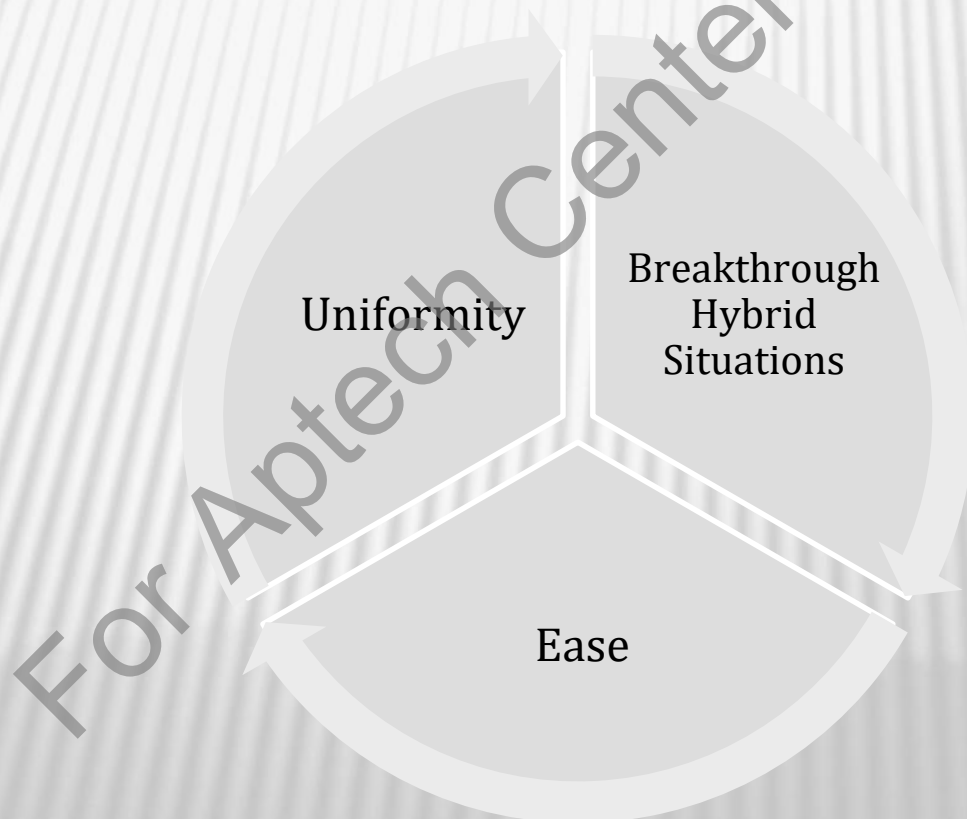
Various Editions of SQL Server 2016

SQL Server Edition	Description
Enterprise	Delivers comprehensive high-end datacenter capabilities with super fast performance, unlimited virtualization, and end-to-end business intelligence.
Standard	Delivers basic data management and business intelligence database for medium to small-scale organizations to run their applications and supports tools for on-premise and cloud.
Web	Provides scalability, affordability, and manageability capabilities and delivers a low total-cost-of-ownership option for companies that are into Web hosting.
Developer	Delivers all the functionality of Enterprise edition to developers but is not intended to be used as a production server. Ideal for development and testing environments.
Express	Delivers an entry-level, free database and is ideal for learning and building desktop and small server data-driven applications. Also suitable for independent software vendors, developers, and hobbyists building client applications.

Summary

SQL Server 2016

- Great features: User can create better scalable, high performance, and more secure applications.
- Hybrid cloud can be used whenever required.
- New features: Stretch Database, Always Encrypted, Native JSON support, and PolyBase.
- Enhanced features: In-Memory OLTP
- Four main editions:
  Enterprise, Standard, Express, and Developer
- The Express Edition: Free and offers basic features.
  Does not support: Advanced new features introduced in SQL Server 2016.
- The Enterprise Edition: Premium edition, supports all the basic and advanced features.