R Services in SQL Server 2016

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SQL Server R Services

A new feature in SQL Server 2016

Starts a new workload in SQL Server focused on advanced analytics

Enables enterprise customers to embrace the highly popular R language, and combine it with in-database analytics

Allows building intelligent, predictive applications with R and deploying them in a production environment

Challenges with Embracing Open Source R

Data Movement

Moving data from the database to the R Runtime becomes painful as data volumes grow and carries security risks

Operationalization

How do I call the R script from my production application?

Scale/ Performance

R runs single threaded and only accommodates datasets that fit into available memory

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SQL Server R Services to the Rescue

Reduce or eliminate data movement with In-Database analytics	SQL Server 2016 extensibility mechanism allows secure execution of R scripts on the SQL Server
Operationalize R scripts and models	Use familiar T-SQL stored procedures to invoke R scripts from your application Embed the returned predictions and plots in your application
Enterprise Performance and scale	Use SQL Server's memory querying and Columnstore indexes Leverage RevoScaleR support for large datasets and parallel algorithms

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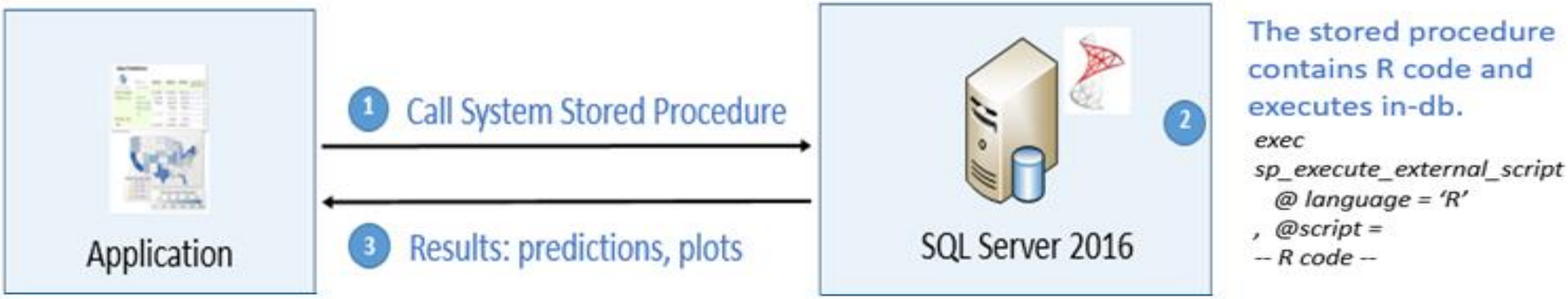
SQL Server R Services Interaction



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Ways to Call R (Stored Procedure)

- Embedding R code directly in a SQL Stored Procedure
- This can then be called by other applications to embed charts or tables created by R using data in the database

Ways to Call R (Create Models using Data in DB)

- Use the computing power of the database to fit the model
- The process in R is as follows:

  - Make a connection to the SQL Server 2016 database
  - Create an object referencing a table or query in SQL Server 2016
  - Instruct R to perform computations in the database
  - Use one of the RevoScaleR "rx" functions to fit the model, using a syntax similar to standard R functions