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# Maintain Reporting Integrity in SQL Server Reporting Services

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# MAINTAIN REPORTING INTEGRITY IN SQL SERVER REPORTING SERVICES

A graduate project submitted to Dakota State University in partial fulfillment of the  
requirements for the degree of

Master of Science

in

Information Systems

December, 2015

By

Sanketh Pillamari

Project Committee:

Ronghua Shan

Stephen Krebsbach

Zixing Shen

## PROJECT APPROVAL FORM

We certify that we have read this project and that, in our opinion, it is satisfactory in scope and quality as a project for the degree of Master of Science in Information Systems.

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Master's Project Title: Maintain Reporting Integrity in SQL Server Reporting Services

Faculty supervisor: Royhan Shan Date: 12/15/15

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Committee member: Zixing Shen Date: 8/21/2015

## ACKNOWLEDGMENT

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I would like to extend my thanks to Professor Stephen Krebsbach & Professor Zixing Shen for being on the committee.

I would like to thank my Business Intelligence Manager, Michael Malsom from MetaBank for his invaluable suggestions and encouragement.

I would like to thank my beloved parents for their encouragement and support in every aspect of my life.

## ABSTRACT

This project involves implementing a database management system. This process interprets modifying existing stored procedures, identifying the component part of the procedure requiring modification writing a new SQL code. The interpretation process also includes mapping document for the new database, testing and displaying results on a GUI. As a result, there are a number of reports will cease to work properly through maintaining reporting integrity.

Operational Data Source (ODS) vs Data Mart (DM) and Data Warehouse (DW)

ODS – In this project most of the databases on **Old Database** are designed to be replicas, or near replicas, of the source data or systems behind them. These source systems are almost always transactional systems and are designed for getting information into a database. An ODS is meant to facilitate the integration of data from multiple sources which includes **New Database** for further operations.

DM/DW – There is a single database that is being used for data warehousing purposes. Includes schemas corresponding to individual Data Marts. Designed for analytical reporting.

### **Problem Specification**

This project develops a database management system. It uses the logic of the New Database to query the existing stored procedure from the old database. The reports are created using T-SQL code and stored procedures. The output is presented in the form of reports and dashboards. The data can be understood visually in form of graphs and charts for different reports.

The project report **Maintain Integrity to Support SQL Server Reporting Services** will be implemented using Microsoft SQL Server Management Studio, Microsoft Visual Studio 2010 (SQL Server Data Tools) and Report Server (The Business Intelligence Suite).

## DECLARATION

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,

Sanketh Pillamari

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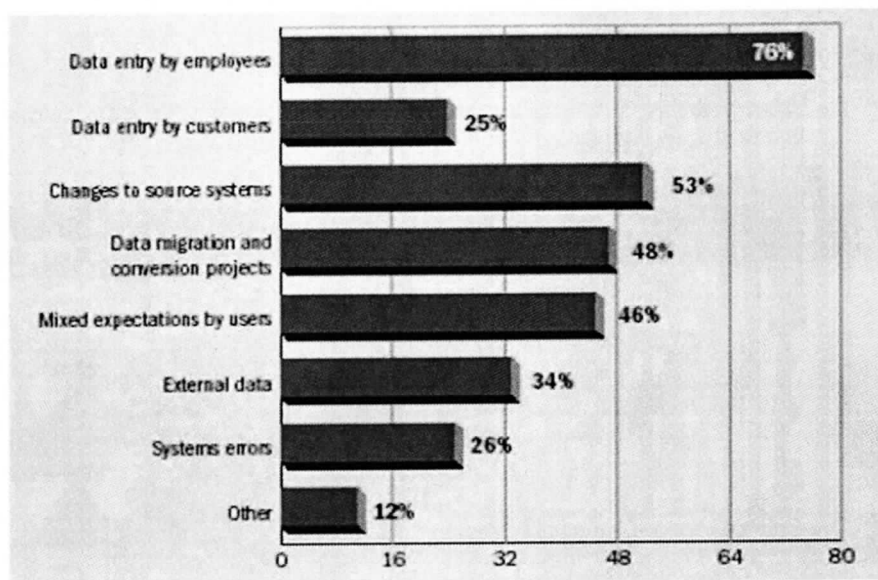
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# CHAPTER 1

## INTRODUCTION

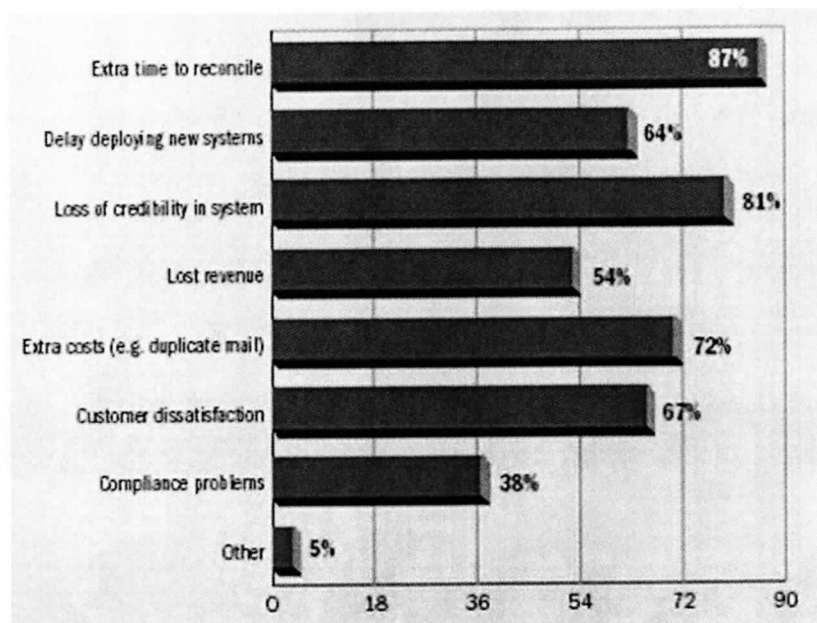
### 1.0 Background of the Problem



[1] Figure 1: Sources of Bad Data

Database integrity [1] referring to any situation is a global problem, in which case the database is impractical or improperly used because of issues unrelated to security. In other words issues in which a misunderstanding has been created by the user and data is faulty around. Yes old dated or wrong in general. It is not databases, fault, it's the creator of the database's fault. In other words catastrophic failure. Database integrity, usually results in serious issues and difficulties caused by simple misunderstandings, which could be prevented with cautious methods, can cause in major devastations. There are many cases, where minor data integrity mistakes lead to a catastrophic error. Severe hindrances of flow causes losses of hundreds and thousands of dollars in productivity and also into debt. Normally the problem with database integrity is outdated information. Outdated information is any information which is too old to be of any relevant use. Outdated information entered into a database is

oftentimes the answer of old inaccurate and inefficient creations in systems. Database integrity is severely damaged by outdated information. However, there are cases where database technically is severely wrong due to human error.



[1] Figure 2: Problems Caused By Bad Data

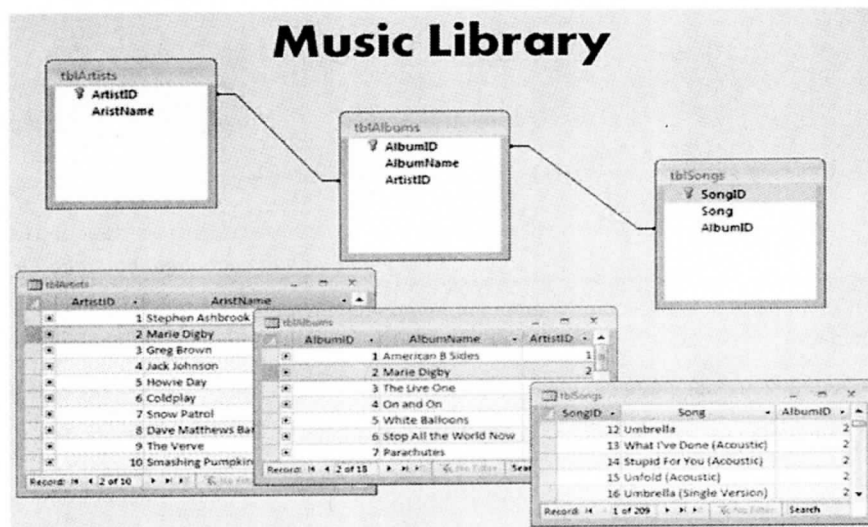
In this morbid cartoon, it is a plot approximately 98 thousand patient's die a year because pharmacists and Prescriptions cannot read their own script. In fact, people are actually dying because of indecipherable data. This information is then entered in databases and other different requirements words filled out by other people, the data in the database are incorrect and the integrity of database has been compromised resulting in demise of the patient.

To explain, let's say we take in a music library made up these three tables an artist table and albums table and of course a song stable now the top primary table here is the artist table where we begin to enter data our information once an artist is mentioned here. We can then begin inserting data into the albums table and relate data back through the artist ID, after that



[1] Figure 3: Morbid Cartoon

we can start to inserting information into the songs table and relate information back to the album table through the album ID and that's how our database are set up.

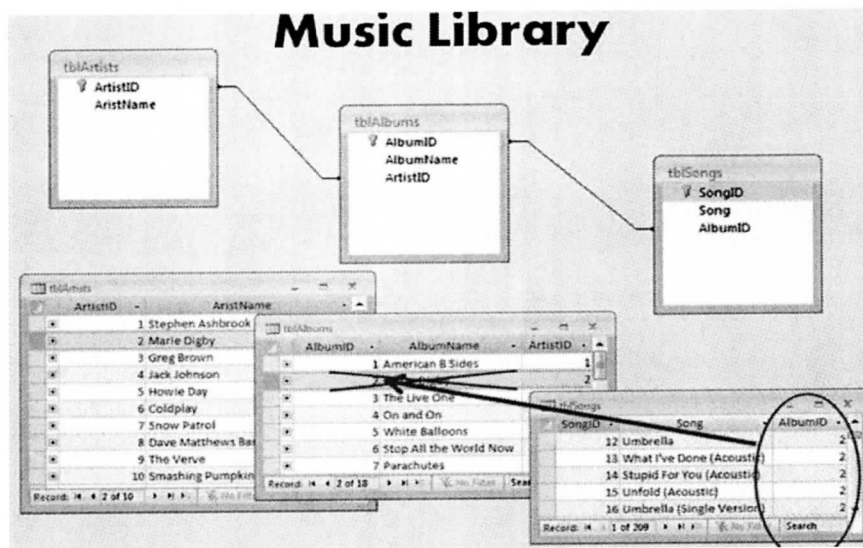


[1] Figure 4: Music Library

Now let's say in one case we deliver all over records typed and that we resolve to trade one of our album say the Marie Digby album well for editing that record from. Our database, then we're still left with all of these songs that reference that special album, which is a problem that

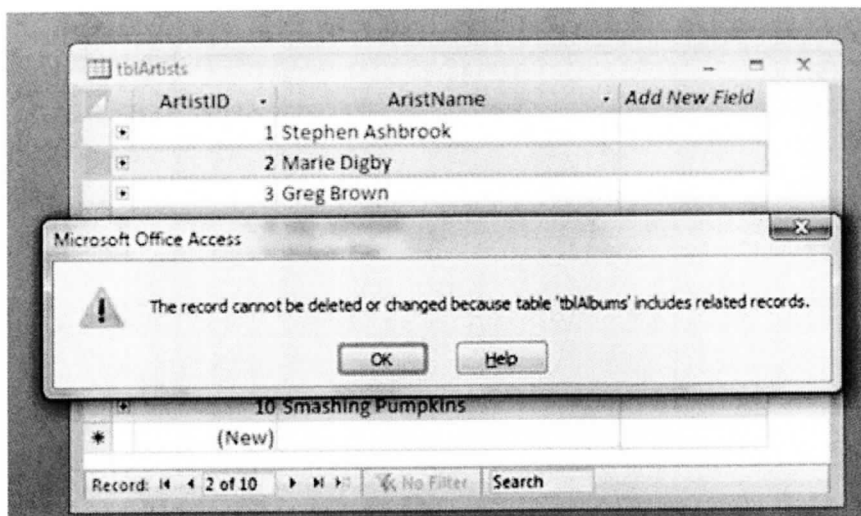
we refer to as creating. A child table that reference records that have been edited or simply do not subsist in the parent table so to preclude this from occurring.

We enforce referential integrity that means if we try to delete an album or ours from a table will receive it warning message stopping the action and reminding us about the related records another table thus protecting our data and other information and that's what referential Integrity doubts.



[1] Figure 5: Enforce Referential Integrity

Database integrity changes as time progresses. Hence in order for it to work at a constant rate database progression is to be held continuously. Basically a database integrity is an issue, it is very possible for major problems to occur when the database fails. However, through constant checking a pair of verification and validation it is possible for databases to be brought up in a safe and maintainable level. It's totally about the creators and users of the database and how they figure out if they're not properly conserved, managed databases suddenly become a much larger issue. Yet with proper working and management it is possible to keep database very secure very reliable and most importantly, accurate and having a high degree of integrity.



[1] Figure 6: Data Validation

### 1.1 Statement of the problem

The report deals with building and generating reports from Microsoft SQL server Databases, a SQL Server Reporting Services software is a server-based report generation system from Microsoft which allows the developers to connect to SQL databases and generate SQL reports in many complex modes.

Data integrity has been maintained in the SQL server databases, ensuring the accuracy and consistency is carried out. Data integrity validation is provided by transact-SQL set of DBCC statements to determine the completeness of the database. There are a number of reports will cease to work properly through maintaining reporting integrity.

### 1.2 Objectives of the project

The project objective to create lists and tabular reports. Building different aspects and how they will configure within SSRS. Using the SSRS security, Data Source Security and Secure Socket Layer deploy the parameterized reports, matrix reports and the new features in the report manager URL.



## CHAPTER 2

### LITERATURE REVIEW

#### **2.0 Microsoft Business Intelligence**

Business Intelligence [2] refers to a set of methods and ways of doing things that are practiced by organizations for strategic deciding. It takes advantage of methods and technologies that concentrate on statistics and business goals to improve the performance.

The goal of Business Intelligence is to better understand customers and better customer service, make the provision and distribution chain more efficient, and to identify the loopholes in the business quickly. The intention to use warehouse is for high level data analysis. It is used for statements about possible future outcomes and statistical analysis. Basically, it is used for better decision making.

#### **Data Warehouse**

Data Warehouse is a "Subject-Oriented, integrated with other things, Time-Version Nonvolatile collection of data in support of decision making". In terms of design data warehouse and data mart are almost the same.

In general a Data Warehouse is used on a business/project level and a Data Marts is used for a business division/department level.

#### **Subject Oriented**

Data that gives information about a particular subject instead of about a company's operations.

#### **Integrated**

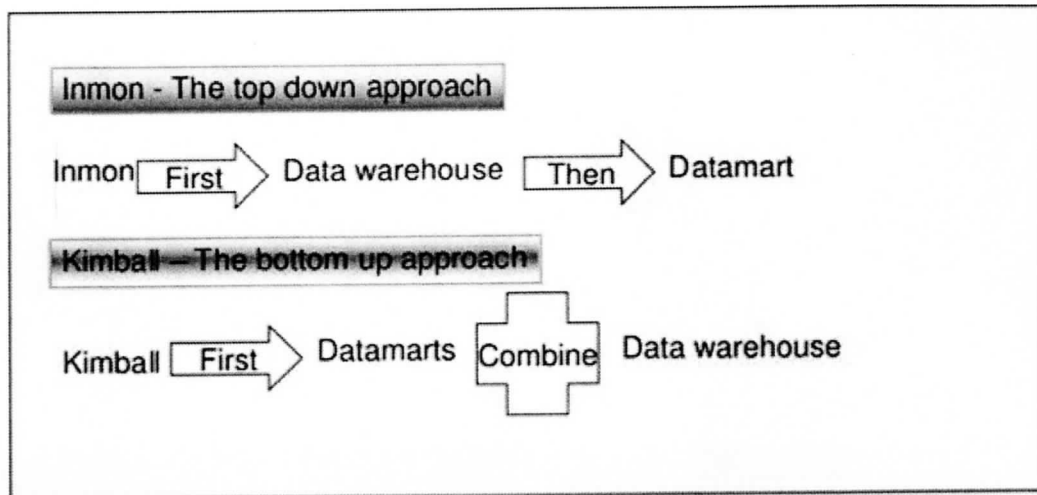
Data that is gathered into the data warehouse from a variety of sources and merged into a clear-thinking and easy to understand.

#### **Time-variant:**

All data in the data warehouse are identified with a particular time period.

**Non-volatile:**

Data is static in a data warehouse. More data is added, but data are never removed.



[2] Figure 7: Data Warehouse Approach

The top-down and bottom-up approaches to sending out and using identity management solution are provided to help, decide the best mode to combine identity management abilities into the desirable environment.

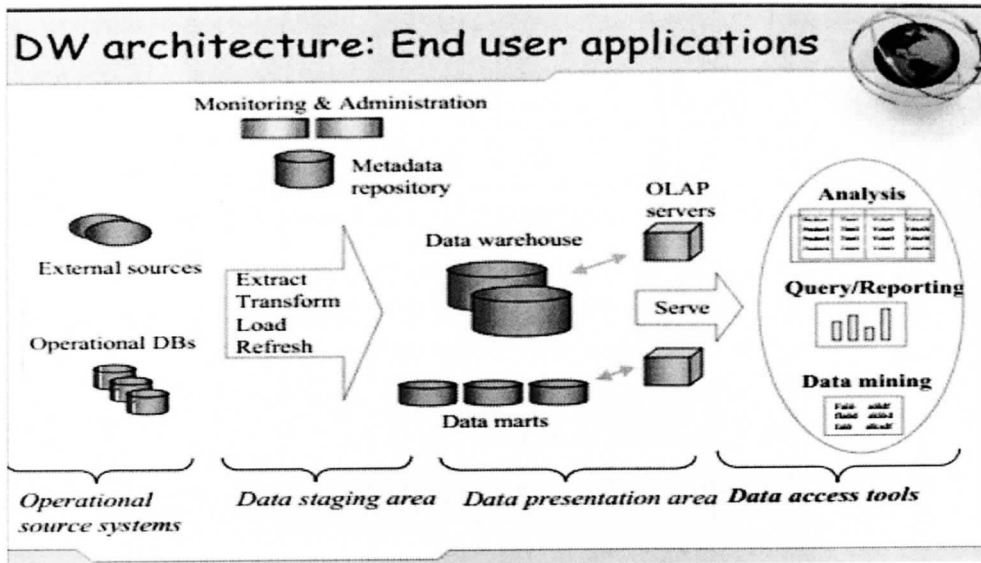
## 2.1 Data Warehouse Architectures

The architectures vary among organizations and depends upon the database design. Typically three common architectures are:

1. Data Warehouse Architecture (Basic)
2. Data Warehouse Architecture (With a Staging Area)
3. Data Warehouse Architecture (With a Staging Area and Data Marts)

### Data Warehouse Architecture (Basic)

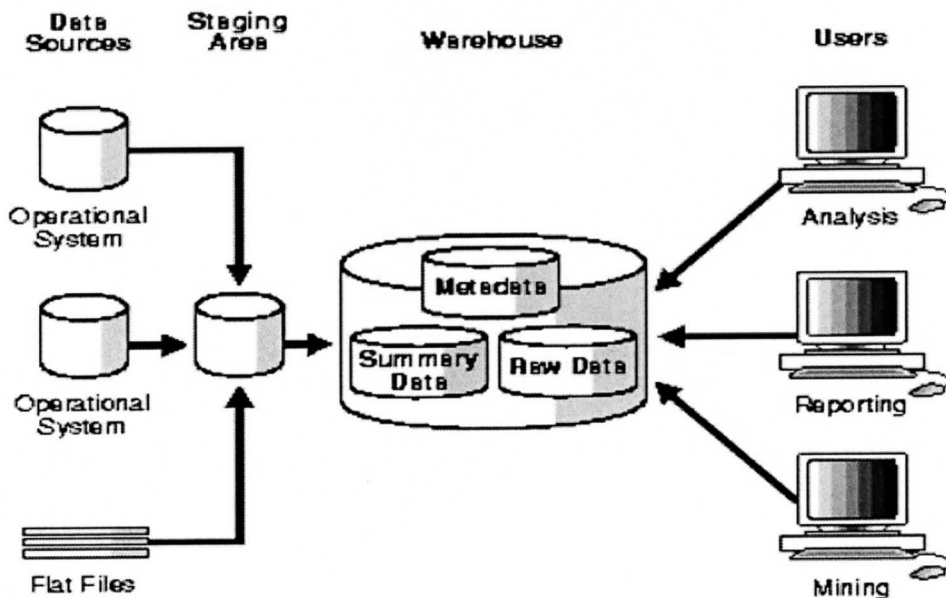
The above data warehouse architecture shows End users immediately receive access to many source systems through the data warehouse.



[2] Figure 8: Data Warehouse Architecture (Basic)

### Data Warehouse Architecture (with a Staging Area)

In the staging area it cleans and process the operational data before data moves to warehouse. This can be performed programmatically, however, most data warehouses uses staging area.

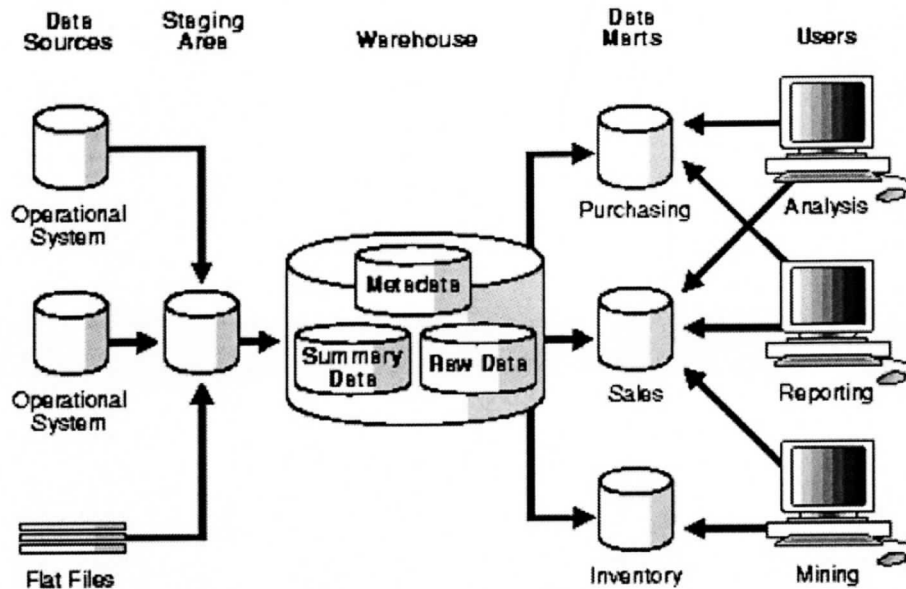


[2] Figure 9: Data Warehouse Architecture (with a Staging Area)

A staging area alters in building the warehouse management.

### Data Warehouse Architecture (with a Staging Area and Data Marts)

Nevertheless the architecture is common, customizing warehouse's architecture for different groups within the organization. This includes data marts, which are system projected for a specific line of business.



[2] Figure 10: Data Warehouse Architecture (with a Staging Area and Data Marts)

### 2.2 Operational Data Source (ODS) vs Data Mart (DW) and Data Warehouse (DW)

**ODS** – In this project most of the databases on Old Database are designed to be replicas, or near replicas, of the source data or systems behind them. These source systems are almost always transactional systems and are designed for getting information into a database. An ODS is meant to ease the consolidation of information from multiple sources which includes New Database for further operations.

**DM/DW** – There is a single database that is being used for data warehousing purposes. Includes schemas corresponding to individual Data Marts. Designed for analytical reporting.

[2] Table 1: OLTP VS OLAP

<b>Online Transaction Processing</b>	<b>Online Analytical Processing</b>
Transactional Processing	Query Processing
Formed by transaction	Formed by subjects
Smaller database	Larger database size
Volatile	Non-volatile
Used by developers	Used by managers
Normalized	DE normalized

[2] Table 2: Typical Reporting Environments

<b>Function</b>	<b>OLTP</b>	<b>Data Warehouse</b>	<b>OLAP</b>
Operation	Update	Report	Analyze
Analytical Requirements	Low	Medium	High
Data Level	Detail	Medium and Summary	Summary and Derived
Age of Data	Current	Historical and Current	Historical, current and projected
Business Events	React	Anticipate	Predict
Business Objective	Efficiency and Structure	Efficiency and Adaptation	Effectiveness and Design

# CHAPTER 3

## SYSTEM DESIGN

### 3.0 SQL Server Reporting Services

**SQL Server Reporting Services (SSRS)** [4] is a Microsoft reporting software application. It works within Visual Studio, in an application Business Intelligence Development Studio (BIDS).

#### Why SSRS?

SSRS is a completely extensible reporting platform, to build an effective business decisions across the company all the users require an easy approach to informative and spontaneous reports to merge information from different sources throughout the establishment.

A large amounts of data are collected in a company and a lot times it is hard to show data in a meaningful manner. So to provide the insight of what is getting into the business and for timely decisions SSRS includes a mixed set of Processing components, programmatic graphical user interfaces and instruments. Processing components are the basis for the architecture of SQL Server Reporting Service and interacting with each other to retrieve data, process layout and deliver a report to a target address.

#### Problems solved by SSRS:

- Reporting services provide a framework to the problem by giving an in-depth and better insight of the data.
- SSRS is a part of BI tool. It can discover the data which are available inside & outside the organization.
- Rich user experience with great visualizations for the end users.

Although, SSRS has aforementioned problem solving capabilities in that location are certain operations that cannot be performed on SSRS, such as exporting a report to excel beyond a specific size lead to loss of information. Yet most of the users are counting on crystal reports because they are confident as used to compare for SQL reporting services.

### 3.1 SSRS Components

[4] **BIDS** – SQL Server Data Tools in a visual studio shell

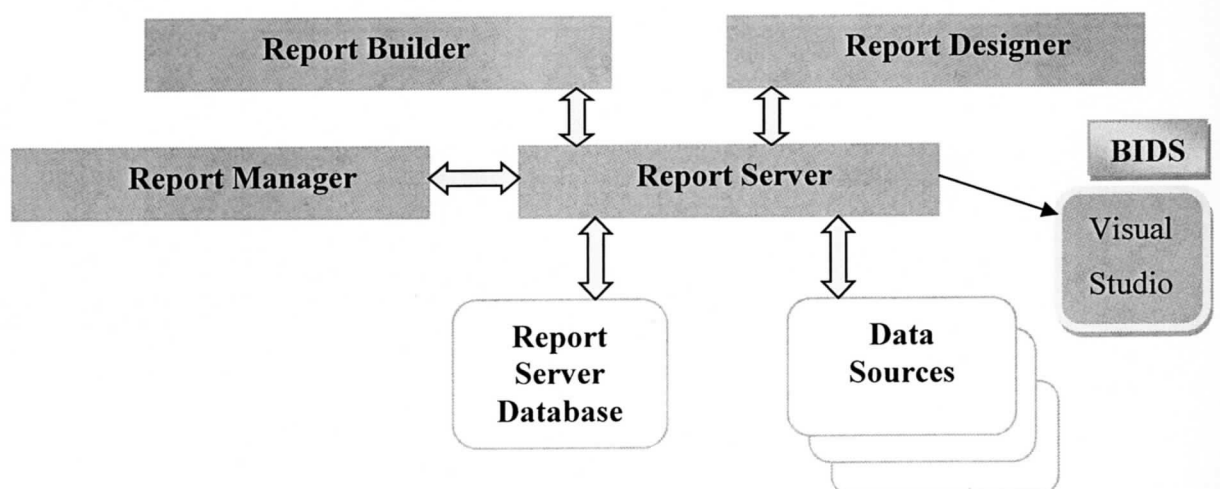
**Report Server**

**Report Builder**

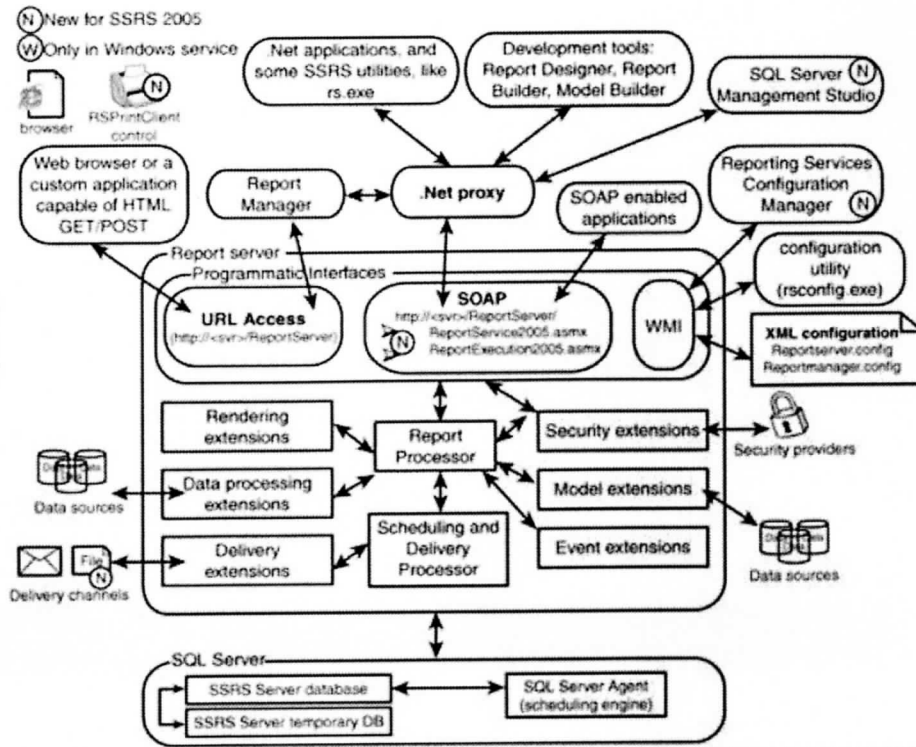
**Report Manager**

**Processors** Assuring Data Integrity, SQL Server Reporting Service and provide an equipment needed for a business that enables developers to append a raw ability to manage things. Processors itself are not extendable in this release of SQL Server Reporting Service.

**Extensions** Assemblies that are used by processors and do specific processing ability to do things, such as Data Retrieval. Developers can write custom extensions.



[3] Figure 11: Server Reporting Services Architecture.



[2] Figure 12: Data Flow Between Components "Within" and "Outside" of SSRS

The following table describes the Reporting Services components

[4] Table 3: Reporting Services Components Summary

Components	Description
Programmatic Graphical User Interfaces	Have ability to access through HTTP and SOAP request
Report Processor	Helps a set of report generation operations from data retrieval to creating and displaying. Report Processor uses other components, such as data extensions to help with report generation
Data-Processing Extensions	Retrieves report's data from a data source. Developers can produce more custom data-



	processing extensions.
Rendering	Change the report's intermediate format (a combination of report's
Command-line utilities	Three utilities, designed to help with the scripting of tasks, installed automatically during the Reporting Services install.
Report Server Database	Stores report definitions, report metadata, report history, cached reports, snapshots, resources, security settings, encrypted data, scheduling and delivery data, and more.
Extensions	Developers can create and make new extensions
Report Server Temporary Database	Stores medium processing cache, data and products
Scheduling and Delivery Processor	Monitors for events (such as timed subscription), works together with Report Processor to give a report, and delivery extensions to deliver scheduled reports to a location specified in the subscription.
Delivery extensions	Save reports to specific devices, such as email or a file system. Developers can create new delivery extensions.
Report Manager	Default Uniform Resource Locator invokes report manager <a href="http://&lt;server&gt;/reports">http://&lt;server&gt;/reports</a>
Report Builder	Easy to use design, functionality, report authorizing and it is a publishing tool, It provides drag-and-drop. All these are executed on a client system
Report Model Designer	Generates models for use in the report builder
Report Designer	Allows developers to produce complex

	reports. Report Designer is comprehensive report writing and a publishing tool, hosted in Business Intelligence Development Studio or Visual Studio.
SQL Server Management Studio	Provides managers with Windows configuration- based, combined to manage SQL Server components including SSRS. From the report management view, Management Studio has almost the same ability to do things to Report Manager, but provides more abilities, such as grouped together a web-farm management.
Security extensions	Get new security extensions and Enabling authentication & authorization of user groups.
Reporting	Start and stop the server by providing administrators with functionalities.
Service Configuration Tool	Rearrange report servers
Performance Monitoring Objects	Offers a view of SQL server reporting service and performance of web service.

### 3.2 Data Management

AdventureWorks [5] Database pertains to a fictitious large, multinational manufacturing company.

The company manufactures and trades metal and composite bikes to North America, Asia and European commercial markets. Whereas its base operation is situated in Bothell, Washington with 290 employees, many regional sales groups are settled throughout their market base. In the year 2000, Adventure Work bikes bought a tiny manufacturing, industrial plant called as Importadores Neptuno, situated in Mexico. Importadores Neptuno manufactures are important subcomponents for the Adventure Works line of occupation. These subcomponents units are transported to the Bothell place for final product assembly.

In 2001, Importadores Neptuno became the sole manufacturer and distributor of the bicycle product group. Referable to the success in previous years, Adventure Works Cycles want to extend its market share by targeting their sales to their best customers, by stretching their product availability through an associate internet site, and reducing their gross revenue through lower production prices."

AdventureWorks are divided into OLTP and BI-DW (Data Warehouse) databases:

Table 4: OLTP & BI-DW Tables and Statistics

	Schema	Tables
<b>OLTP</b>	Sales	19
	Purchasing	5
	Person	13
	Production	25
	Human Resources	6
	dbo	3
<b>BI-DW for OLAP</b>	Dim (Dimensions)	17
	Fact	8

## Find the Size of Database Files

#Query

```
SELECT DB_NAME(database_id) AS DBName,
Name AS Logic_Name,
Physical_Name,
(size*8)/1024 SizeMB
FROM sys.master_files
--WHERE DB_NAME(database_id) = 'AdventureWorks2012'
GO
```

SQLQuery3.sql - RAVINDER\DBODS.AdventureWorks2012 (RAVINDER\sanketh (52))\*

```
SELECT DB_NAME(database_id) AS DBName,
Name AS Logic_Name,
Physical_Name,
(size*8)/1024 SizeMB
FROM sys.master_files
--WHERE DB_NAME(database_id) = 'AdventureWorks2012'
GO
```

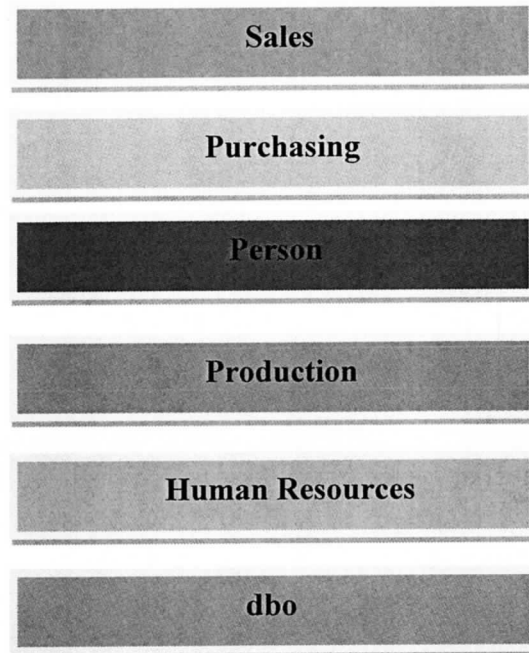
100 %

	DBName	Logic_Name	Physical_Name	SizeMB
1	master	master	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	4
2	master	mastlog	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	1
3	tempdb	tempdev	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	8
4	tempdb	templog	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	0
5	model	modeldev	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	3
6	model	modellog	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	0
7	msdb	MSDBData	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	16
8	msdb	MSDBLog	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	26
9	ReportServer	ReportServer	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	6
10	ReportServer	ReportServer_log	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	1
11	ReportServerTempDB	ReportServerTempDB	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	11
12	ReportServerTempDB	ReportServerTempDB_log	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	4
13	AdventureWorks2012	AdventureWorks2012_Data	C:\Program Files\Microsoft SQL Server\MSSQL11.DBO...	205

Figure 13: Size of Adventure Works 2012 Database

## Adventure Work 2012 Schemas

Table 5: Adventure Work Database Schemas



### 3.3 Entity Relationship Diagram (E-RD)

The relation upon the organization is structured through an abstract ER-Diagram, which not solely specifics the existing entities, however additionally the quality relations through that the system exists and therefore the cardinalities that measure necessary for the system state to proceed.

- The (ERD) Entity Relationship Diagram depicts the link between the information about the objects.
- The ERD is the notation that represents the data modeling activity the attributes of every data object noted is that the ERD are often represented resign an information object description.

Main factors of the Entity Relationship Diagram are

1. Data object
2. Relationships

- 3. Attributes
- 4. Various varieties of indicators.

**Adventure Data Works Data Objects and its relationships**

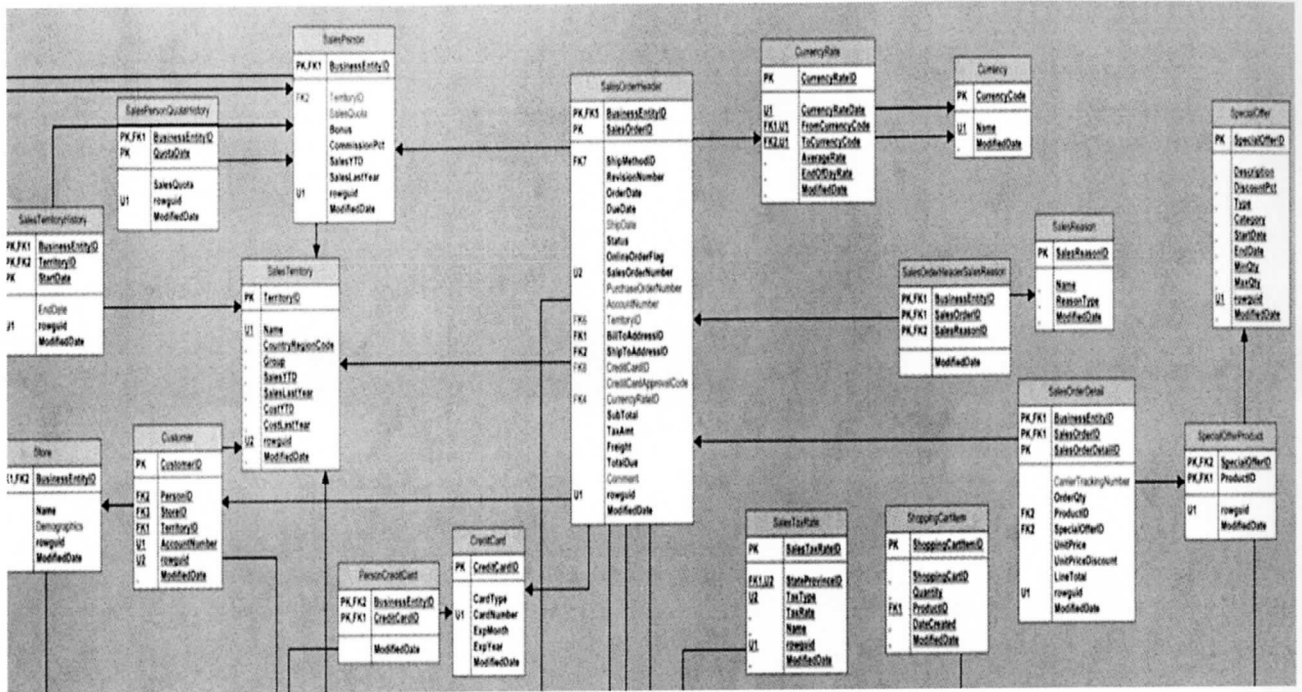


Figure 14: ER-D Sales

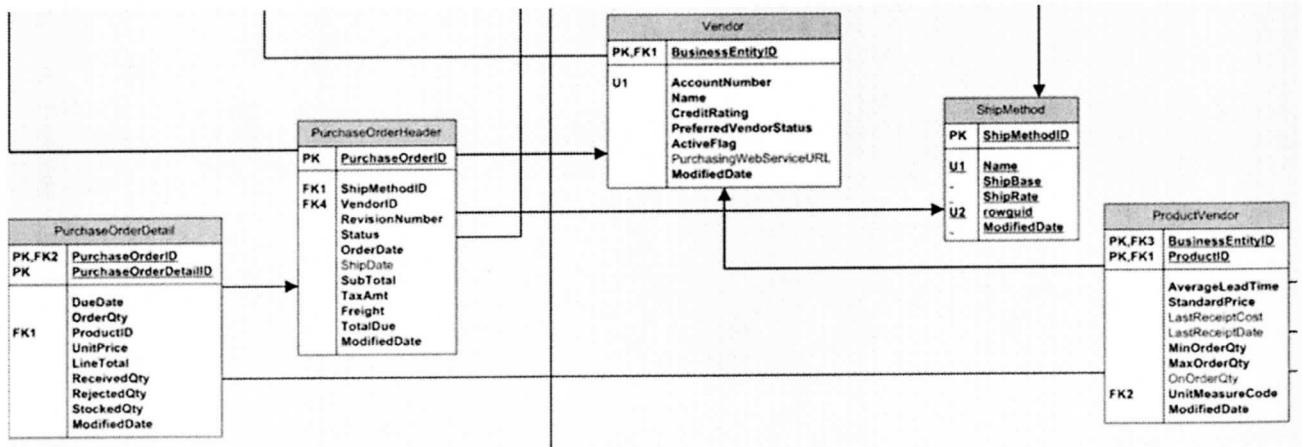


Figure 15: ER-D Purchasing

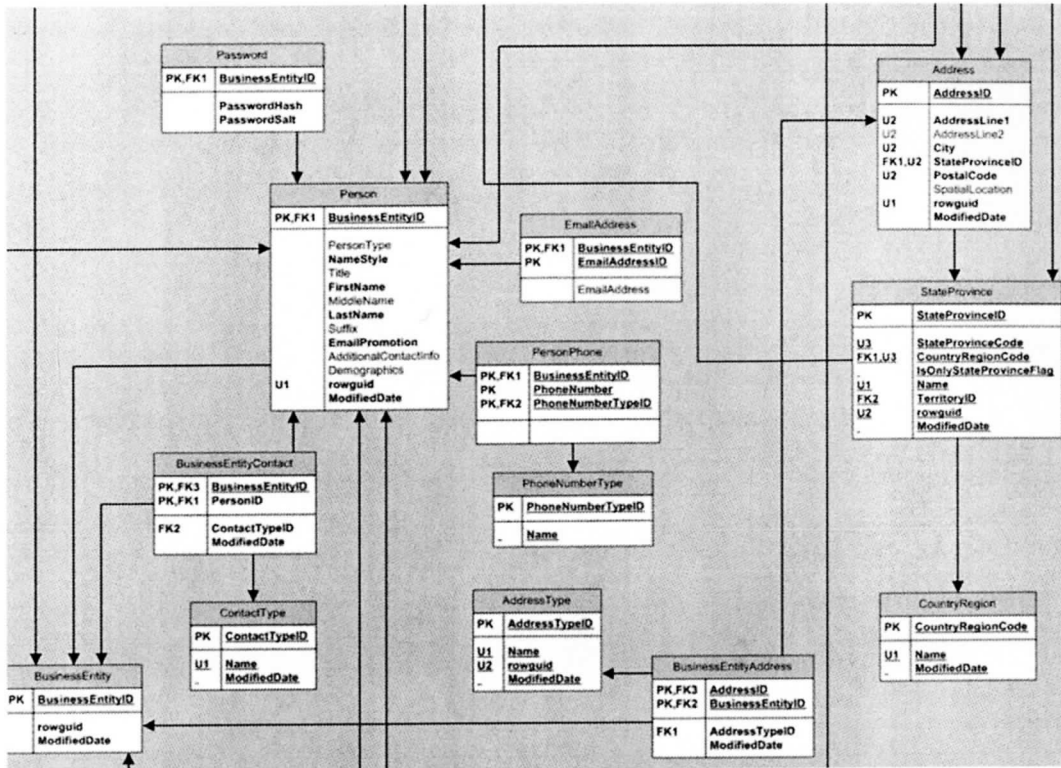


Figure 16: ER-D Person

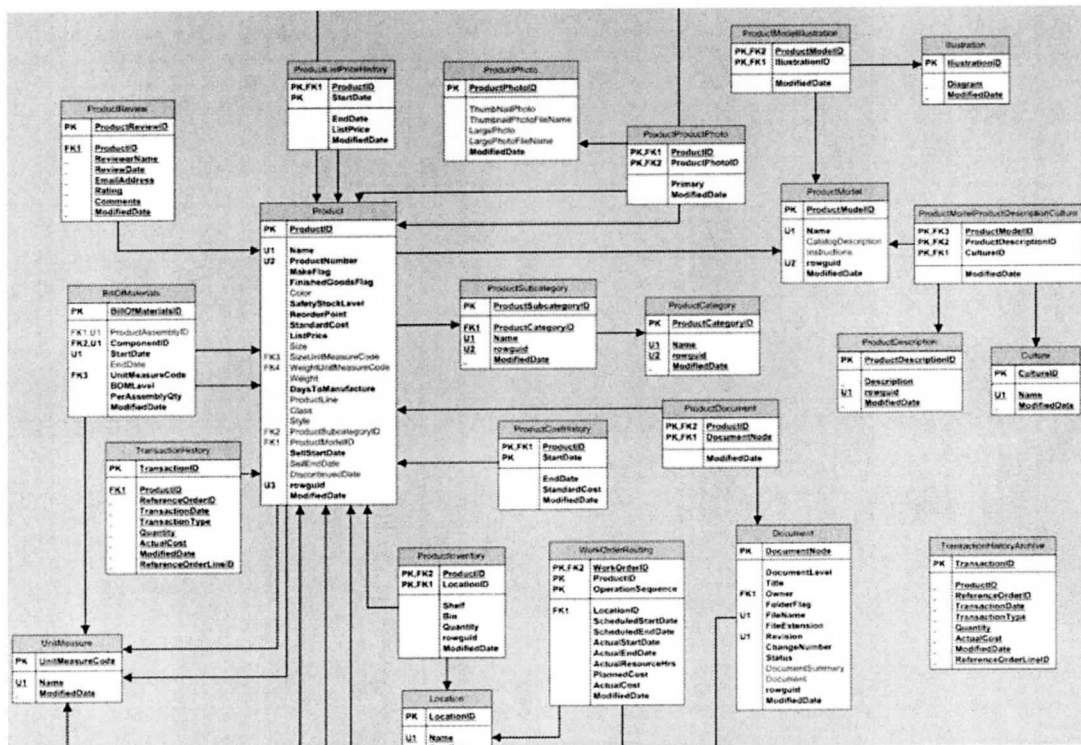


Figure 17: ER-D Production

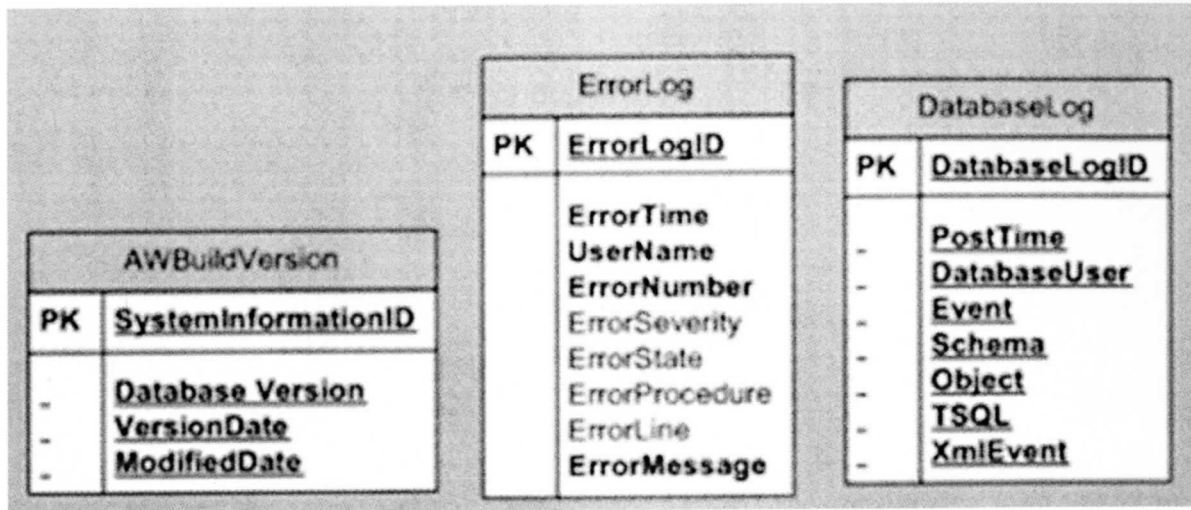


Figure 18: ER-D dbo

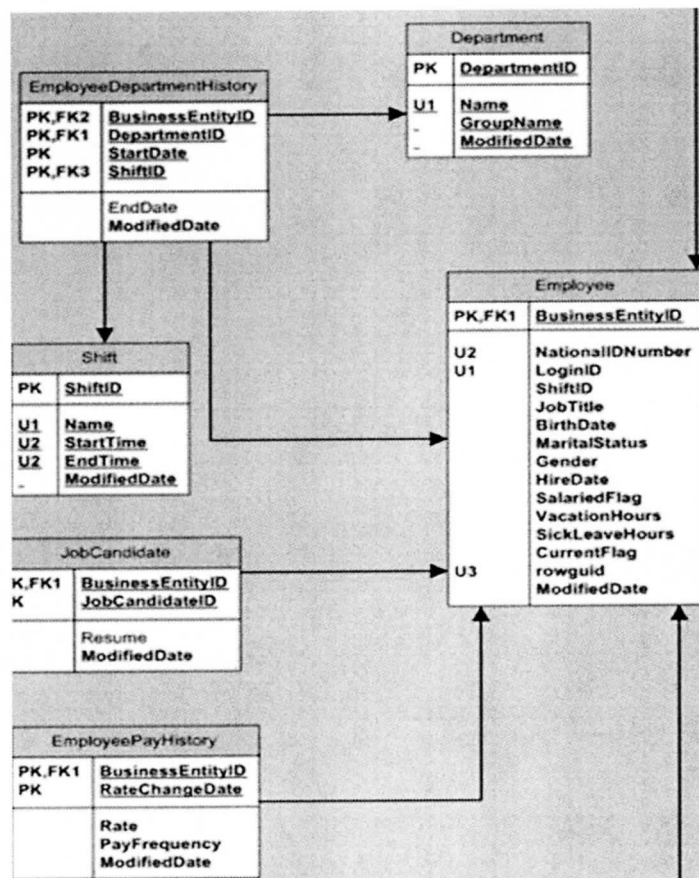


Figure 19: ER-D Human Resources



## CHAPTER 4

### IMPLEMENTATION

#### 4.0 Download and Install Database

Following Steps should be followed for downloading and installing AdventureWorks 2012 database in Microsoft SQL Server Management Studio.

Download AdventureWorks 2012 from

<https://msftdbprodsamples.codeplex.com/downloads/get/165399>

The file consists of. MDF file (Master Data File), known to be a primary database file consisting of schema and data, and the second file is. LDF (Log Data File), which holds the logs. And third file is. NDF file (Non Primary Files/ Other database files).

We can set up the AdventureWorks 2012 database in two ways:

1. Executing following SQL command in SQL Server Management Studio.

#### #Query

```
USE [master]
GO
CREATE DATABASE [AdventureWorksDW] ON C:\Program Files\Microsoft SQL
Server\MSSQL11.DB21\MSSQL\DATA
( FILENAME = N'C:\Program Files\Microsoft SQL
Server\MSSQL11.DB21\MSSQL\DATA\AdventureWorks2012.mdf' ),
( FILENAME = N'C:\Program Files\Microsoft SQL
Server\MSSQL11.DB21\MSSQL\DATA\AdventureWorks2012_Log.LDF' )
FOR ATTACH
GO
If exists (select name from master. sys. databases SD where name =
N'AdventureWorks2012' and
SUSER_SNAME(sd.owner_Ravinder) = SUSER_SNAME() )
EXEC [AdventureWorks2012].dbo.sp_changedbowner
@loginame=N'Ravinder\sanketh', @map=false
GO
```

2. Most likely we attach database files listed above. By using SQL Server Management Studio **Attach** database wizard.

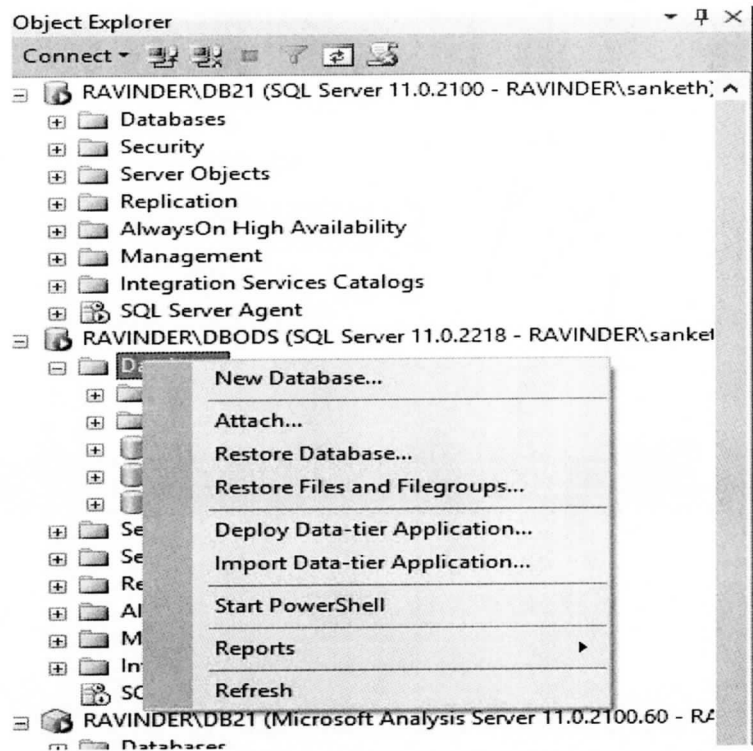


Figure 20: Attach Database to Server Instance

Select the Attach Option by right clicking on the database.

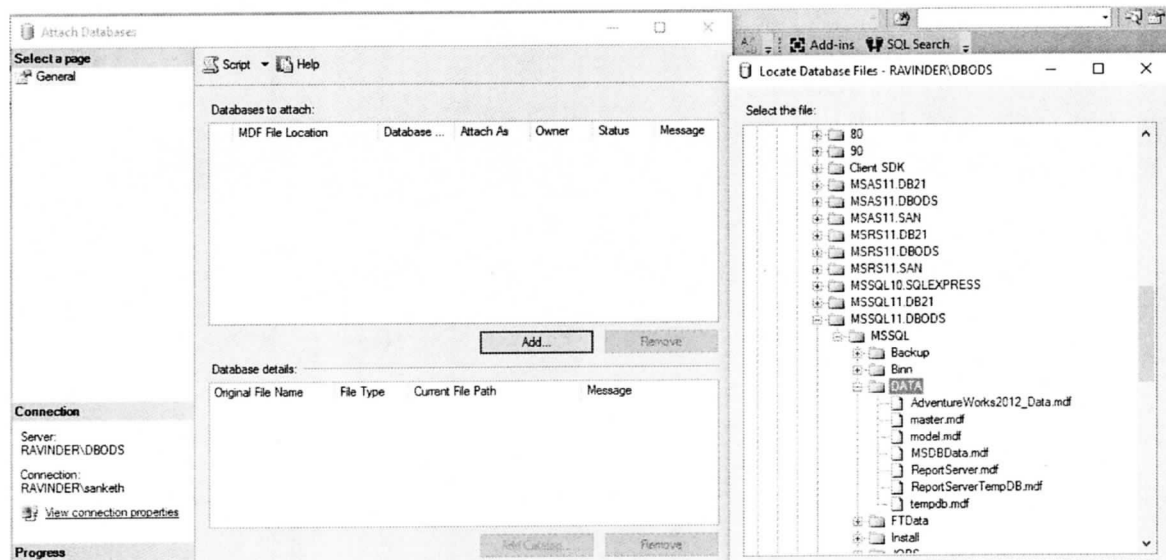


Figure 21: Choose AdventureWorks2012.mdf

Now by clicking the **Add** option from the new window, opt the **AdventureWorks2012.Mdf** file from the drive.

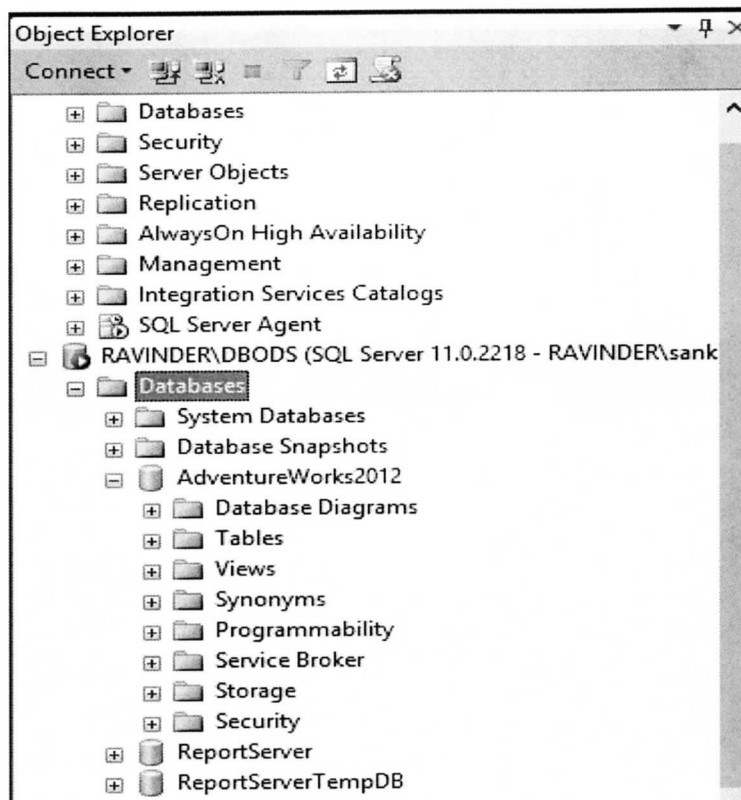


Figure 22: AdventureWorks2012 Attached Successfully

We can view the AdventureWorks2012 Database successfully attached under **RAVINDER\DBODS** SQL server instance.

## 4.1 Checking Corruption & Data Integrity

The best practice to detect regularly corruption is to simply run the DBCC CHECKDB on a regular basis – as a scheduled task.

The following steps we follow to determine the regular corruption and preserve wholeness in the database

Step 1: Connect to the server instance (RAVINDER\DBODS) and need to create a new SQL Server Agent job.

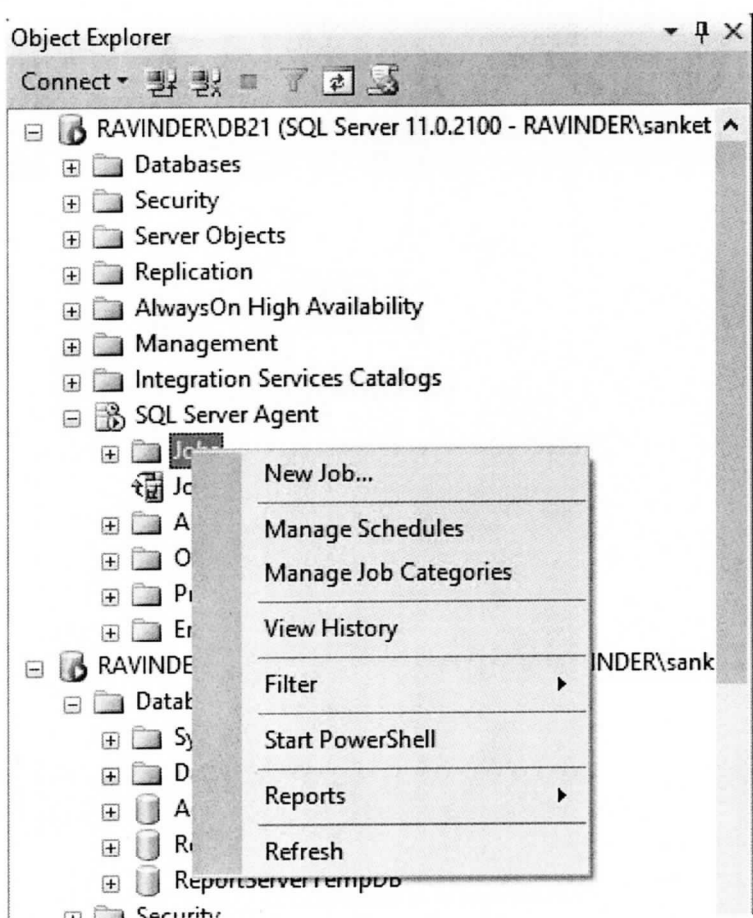


Figure 23: SQL Server Agent New Job

Step 2: Assign new job a name – DBCC CHECKDBs in the General tab. Also assign owner - RAVINDER\DBODS

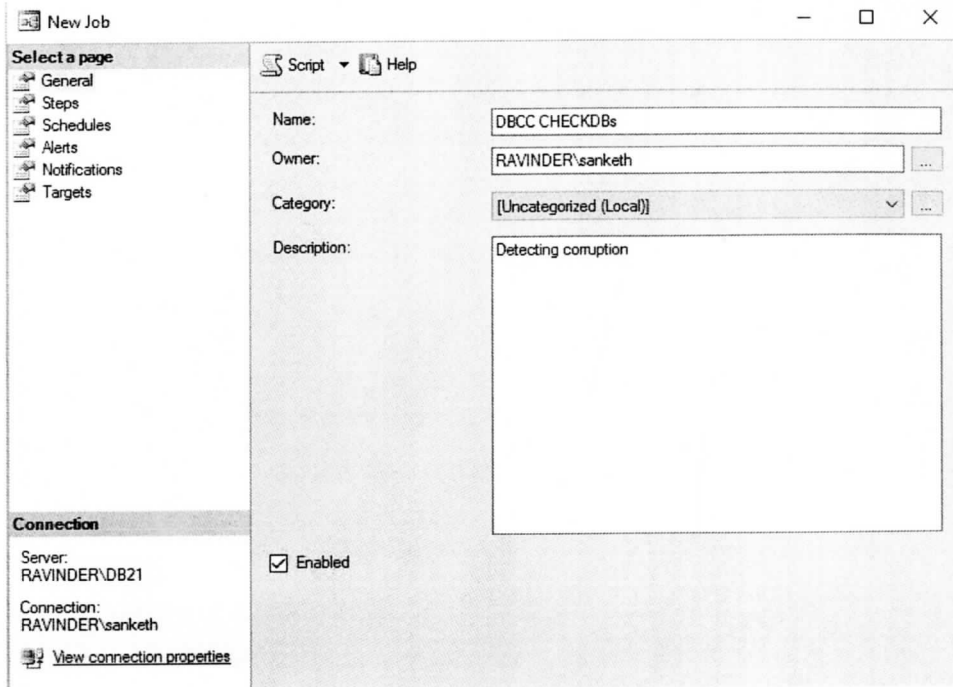


Figure 24: Assign an Owner

Step 3: Now type the command specified in this step.

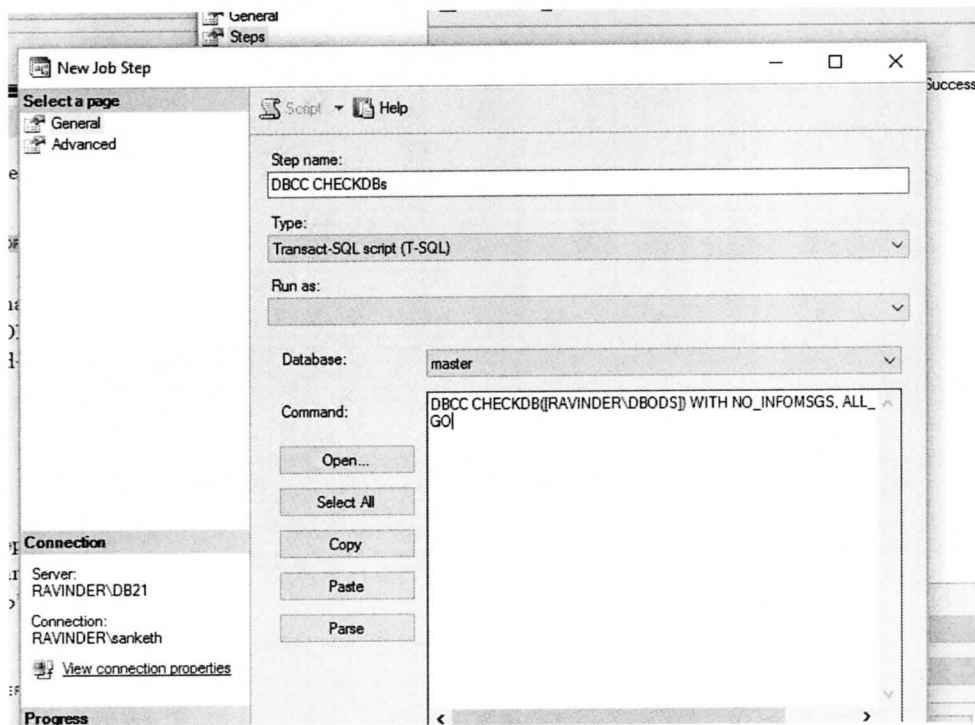


Figure 25: CHECKDB Command

The more beneficial approach to check corruption on all the databases instead of carrying the command on every single database. We create a new stored procedure that accurately 'loop' all other databases.

### #Query

```
EXEC master..sp_foreachdb
    @command = 'DBCC CHECKDB (RAVINDER\DBODS) WITH NO_INFOMSGS,
ALL_ERRORMSGs'
GO
```

```
DBCC CHECKDB ([AdventureWorks2012])
DBCC CHECKDB ([AdventureWorks])
DBCC CHECKDB ([AdventureWorksDW])
DBCC CHECKDB ([AdventureWorksDW2008])
DBCC CHECKDB ([AdventureWorksLT])
DBCC CHECKDB ([AdventureWorksLT2008])
```

The following command checks the logical and physical integrity of a particular database by performing DBCC CHECKTABLE, DBCC CHECKALLOC and DBCC CHECKCATALOG operations.

By following steps mentioned above, we have successfully set up our server to check regularly for any database corruption.

- The DBCC CHECKDB used to check for and fix database corruption issues.
- It is a more expensive IO operation.
- Should be run frequently to keep track of corrupted database and maintaining data integrity.

## 4.2 Servers Information

The below are the database servers

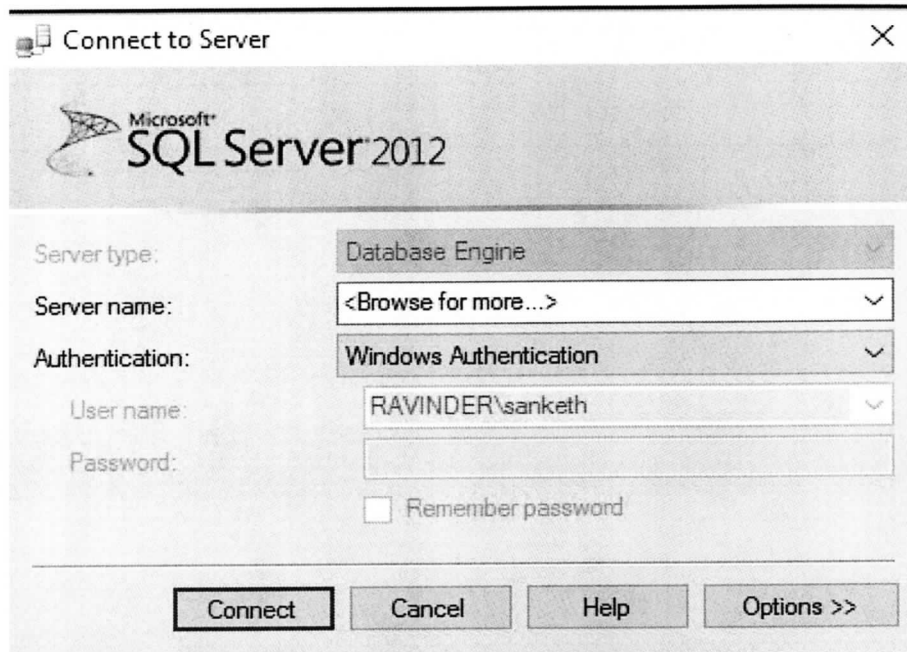


Figure 26: Establishing Connection to Servers

1. Server name: RAVINDER\SQLEXPRESS
  2. Server name: RAVINDER\DBODS
  3. Server name: RAVINDER\DB21
- Tables are migrated from RAVINDER\SQLEXPRESS to RAVINDER\DBODS. There are also tables on SQLEXPRESS that are not on DBODS server.
  - Data from SQLEXPRESS server is migrated to another according to the need of DBODS server.

### Field names

Most tables have fields that conform to a naming convention per the below for which the 1<sup>st</sup> letter indicates the type of domain:

I = integer or numeric

S = string

D = date

### 4.3 Report Manager URL

Deploying SSRS reports to the Report Manager URL

URL: [http://ravinder/ReportServer\\_DBODS](http://ravinder/ReportServer_DBODS)

## ravinder/ReportServer\_DBODS - /

Friday, November 13, 2015 10:06 AM	<dir> <a href="#">Data Sources</a>
Friday, November 13, 2015 10:13 AM	<dir> <a href="#">Datasets</a>
Wednesday, November 18, 2015 11:48 AM	<dir> <a href="#">first_project</a>
Friday, November 13, 2015 10:06 AM	<dir> <a href="#">SSRS Practice</a>

You hav

Microsoft SQL Server Reporting Services Version 11.0.2218.0

Figure 27: SQL Server Report Manager URL



# ravinder/ReportServer\_DBODS - /first\_project

---

## [To Parent Directory]

Tuesday, November 24, 2015 5:36 PM	26736 <a href="#">ADW1</a>
Tuesday, December 01, 2015 3:50 PM	16299 <a href="#">BarChart</a>
Tuesday, December 01, 2015 10:41 AM	16946 <a href="#">CreditCardTaxAmount</a>
Wednesday, November 18, 2015 11:48 AM	19287 <a href="#">Report1</a>
Wednesday, November 25, 2015 1:25 AM	33565 <a href="#">ReportSellerADW</a>
Tuesday, December 01, 2015 10:42 AM	53674 <a href="#">ResellerDetails</a>
Tuesday, December 01, 2015 3:34 PM	29034 <a href="#">TextBoxParameters</a>
Monday, November 30, 2015 6:47 AM	19977 <a href="#">TotaldueSalesReport</a>

---

Microsoft SQL Server Reporting Services Version 11.0.2218.0

Figure 28: SQL Server Report Manager URL Directory

## Often – used tables:

### **[Sales].[SalesOrderHeader]**

/\*\*\*\*\* Script for SelectTopNRows command from SSMS \*\*\*\*\*/

```
SELECT TOP 1000 [SalesOrderID]
,[RevisionNumber]
,[OrderDate]
,[DueDate]
,[ShipDate]
,[Status]
,[OnlineOrderFlag]
,[SalesOrderNumber]
,[PurchaseOrderNumber]
,[AccountNumber]
,[CustomerID]
,[SalesPersonID]
,[TerritoryID]
```

```

,[BillToAddressID]
,[ShipToAddressID]
,[ShipMethodID]
,[CreditCardID]
,[CreditCardApprovalCode]
,[CurrencyRateID]
,[SubTotal]
,[TaxAmt]
,[Freight]
,[TotalDue]
,[Comment]
,[rowguid]
,[ModifiedDate]
FROM [AdventureWorks2012].[Sales].[SalesOrderHeader]

```

### **[Sales].[SalesOrderHeaderSalesReason]**

```

/***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP 1000 [SalesOrderID]
    ,[SalesReasonID]
    ,[ModifiedDate]
FROM [AdventureWorks2012].[Sales].[SalesOrderHeaderSalesReason]

```

### **[Sales].[SalesTerritory]**

```

/***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP 1000 [TerritoryID]
    ,[Name]
    ,[CountryRegionCode]
    ,[Group]
    ,[SalesYTD]

```

```
,[SalesLastYear]
,[CostYTD]
,[CostLastYear]
,[rowguid]
,[ModifiedDate]
FROM [AdventureWorks2012].[Sales].[SalesTerritory]
```

### **[Person].[StateProvince]**

```
/****** Script for SelectTopNRows command from SSMS *****/
```

```
SELECT TOP 1000 [StateProvinceID]
,[StateProvinceCode]
,[CountryRegionCode]
,[IsOnlyStateProvinceFlag]
,[Name]
,[TerritoryID]
,[rowguid]
,[ModifiedDate]
FROM [AdventureWorks2012].[Person].[StateProvince]
```

### **[Production].[WorkOrder]**

```
/****** Script for SelectTopNRows command from SSMS *****/
```

```
SELECT TOP 1000 [WorkOrderID]
,[ProductID]
,[OrderQty]
,[StockedQty]
,[ScrappedQty]
,[StartDate]
,[EndDate]
,[DueDate]
```

```
,[ScrapReasonID]  
,[ModifiedDate]  
FROM [AdventureWorks2012].[Production].[WorkOrder]
```

### **[Production].[TransactionHistory]**

/\*\*\*\*\* Script for SelectTopNRows command from SSMS \*\*\*\*\*/

```
SELECT TOP 1000 [TransactionID]  
,[ProductID]  
,[ReferenceOrderID]  
,[ReferenceOrderLineID]  
,[TransactionDate]  
,[TransactionType]  
,[Quantity]  
,[ActualCost]  
,[ModifiedDate]  
FROM [AdventureWorks2012].[Production].[TransactionHistory]
```

#### 4.4 Coding Standards

Although the Business Intelligence procedures have more details, below are some “musts” that we want to highlight:

- Reports should run under a minute. If it does not. There may be some tricks to improve SQL and/ or SSRS performance.
- Always use “nolock” in the queries. For example:

```

Select top 5
[Person].[Person] [BusinessEntityID]
,[PersonType]
,[NameStyle]
,[Title]
,[FirstName]
,[MiddleName]
,[LastName]
,[Suffix]
,[EmailPromotion]
,[AdditionalContactInfo]
,[Demographics]
,[rowguid]
,[ModifiedDate]
from [AdventureWorks2012].[Person].[Person] (nolock)
Join [AdventureWorks2012].[Person].[PersonPhone] (nolock) on
[Person].[Person] [BusinessEntityID] = [Person].[PersonPhone] [BusinessEntityID]
Where FirstName = 'Ken'

```

- Never do a “Select \*”, always do a Select top 10\* from “or other. When using “Select \*” on larger tables, it impacts performance.

## 4.5 Report Authoring

Business Intelligence Component in SQL Server 2010 reporting services introduces two new data regions, the Tablix and Gauge.

### Tablix

The Tablix data region aggregates the previous independent table, list and matrix into a single data region. The customization is better with more grouping of rows and columns.

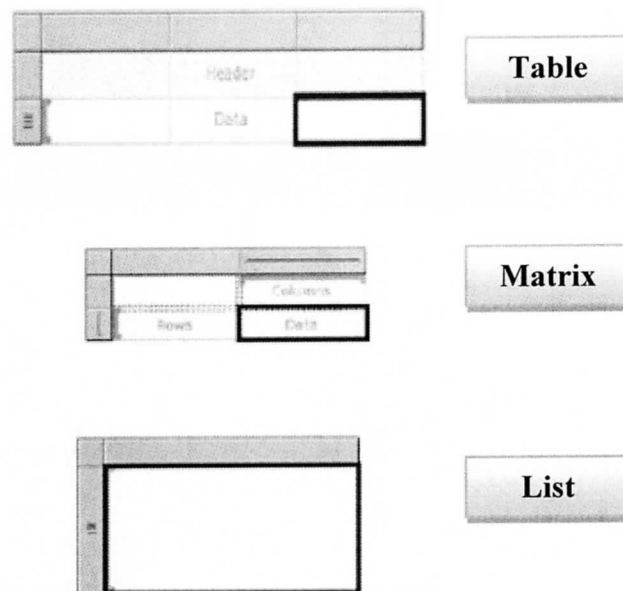


Figure 29: Tablix

### Gauge

This data region is useful for demonstrating the key performance indicator on a report. There are two types,

- Radial
- Linear

We can set a scale range for the gauge maximum and minimum. The significant point in our reporting services while showing a report they use aggregate values

- SUM – Numeric data
- COUNT – Text data.

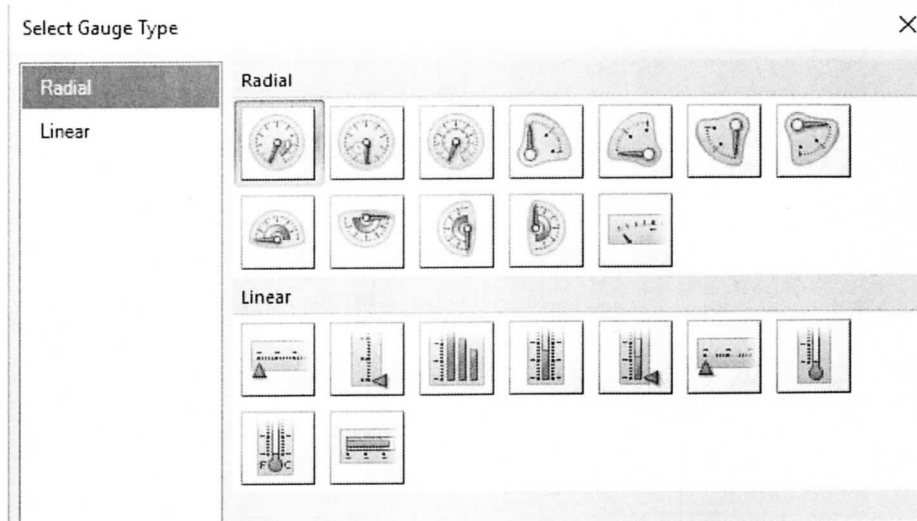


Figure 30: Gauge

## 4.6 Downloading and Installing Microsoft SQL Server Data Tools

Following Steps should be followed for downloading and installing SQL Server Data Tools:

Download SQL Server Data Tools from

<https://www.microsoft.com/en-us/download/details.aspx?id=36843>.

Based on the type of operating system download specific version of SQL Server Data Tools.

### 4.6.1 Running SQL Server Data Tools

We will now run the Business Intelligence Development Studio. During the installation BIDS components are added to SQL Server Data Tools.

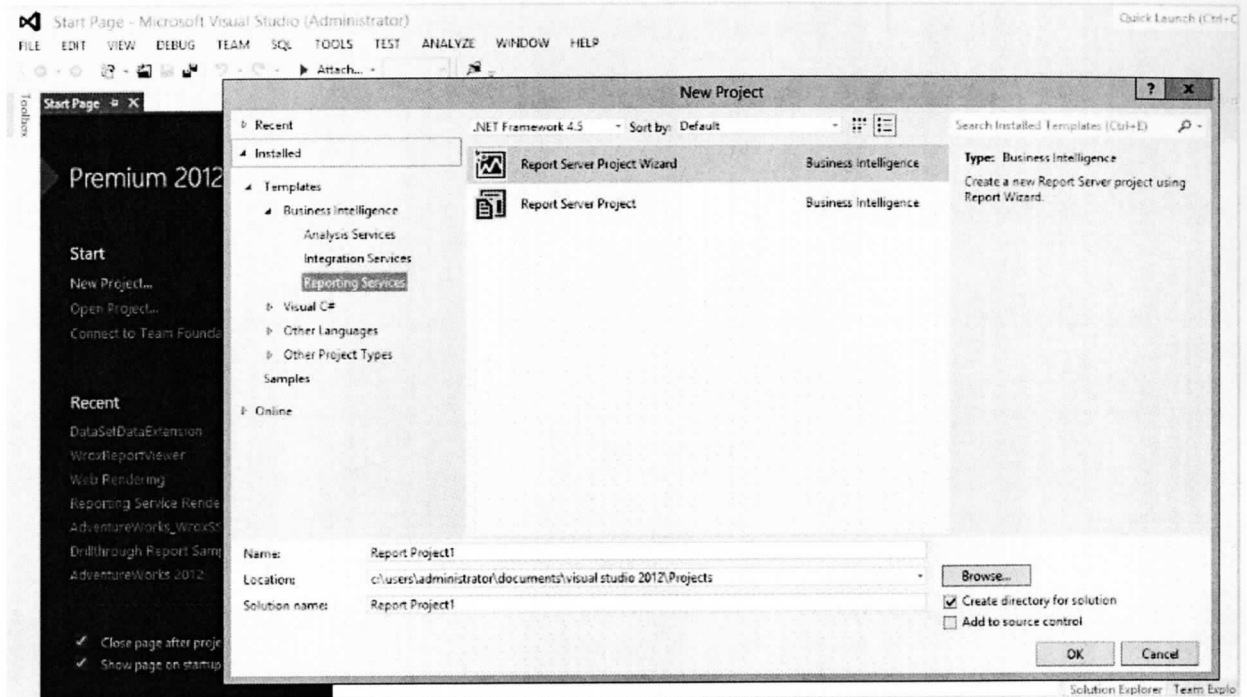


Figure 31: Start SQL Server Data Tools

Step 1: Open SQL Server Data Tools

Step 2: Click File (New Project (Report Server Project Wizard. Give name and location.

Step 3: In the solution Explorer, right click **Shared Data Sources** folder, and choose to **Add New Data Source**. It opens a new window with **Shared Data Source Properties**.

Step 4: Enter Data Source name in the Name textbox as 'First\_SSRS\_DataSource' and click Edit to set Connection String.

Step 5: It opens a **Connection properties** dialog box. Choose Server name as **RAVINDER\DBODS** and opt database name as **AdventureWorks2012**.

**Note: Three server names are given for designing different reports.**

RAVINDER\DBODS

RAVINDER\SQLEXPRESS

RAVINDER\DB21



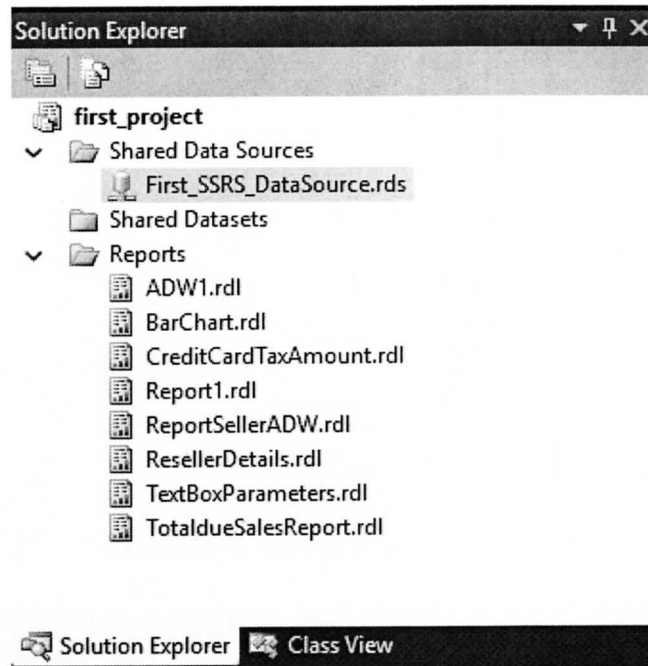


Figure 32: Successfully Created Shared Data Source

Step 6: Click OK and save. We can view 'First\_SSRS\_DataSource' in the solution explorer pane.

#### 4.7 Report Designer

Key points to be observed before designing the reports,

- The Datasets solution explorer shows the data available to the report
- The solution explorer window lets us to **preview** the report, which we have **designed**.
- We can alter the available data or sort order for the account by changing the query in the data tab.
- In the Layout tab we can resize and rearrange the controls.
- The solution explorer, output and properties windows are the standard for Microsoft Visual Studio Windows.

#### Different Types of Reports in SQL Server Reporting Services (SSRS)

- Parameterized reports

- Linked reports
- Snapshot reports
- Cached reports
- Ad hoc reports
- Clickthrough reports
- Drilldown reports
- Drillthrough reports
- Subreports

#### 4.7.1 Designing Sample SSRS Report

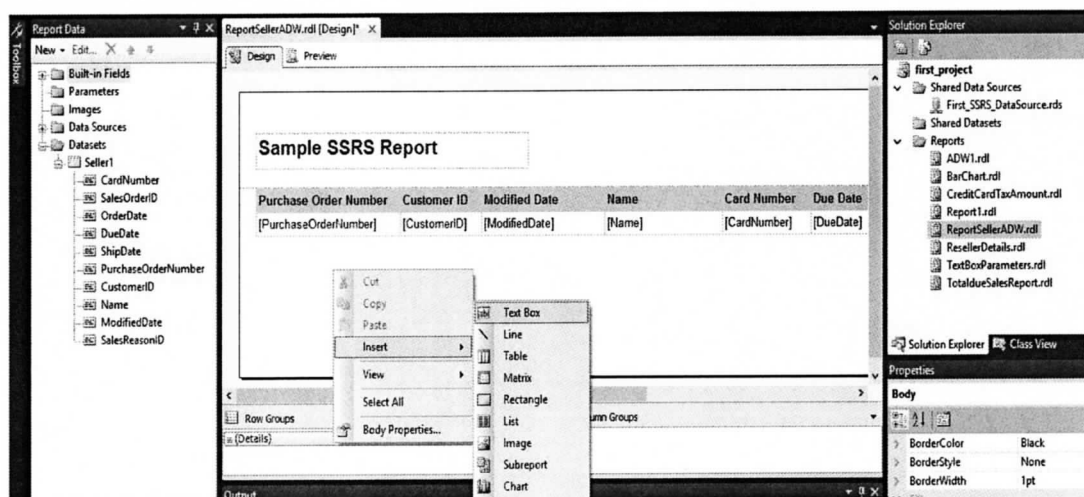


Figure 33: Design Tab

In the above (Figure) Report Data pane shows what data sets are used for this report, the tool box shows items added to this report, Right click the **Datasets** from **Report Data** pane and create a **New Data Set**.

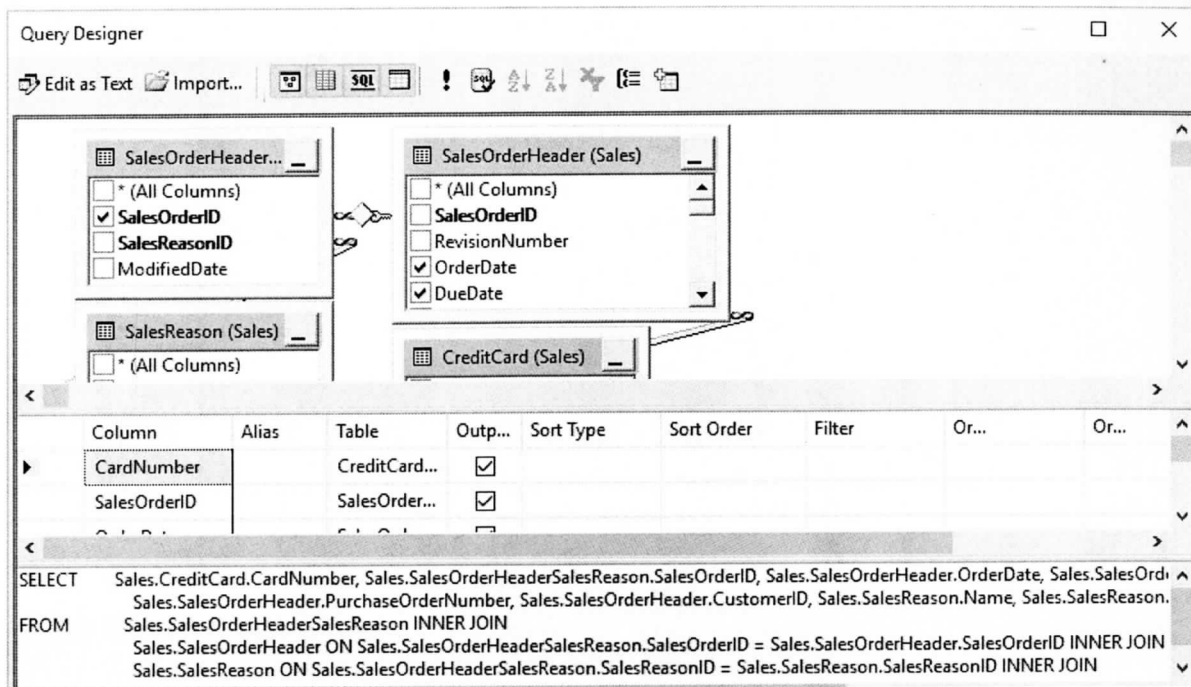


Figure 34: Query Designer

From (Figure 34) Query Designer makes easy to choose what tables needed to query in the report by simply drag and drop. Click on the preview tab and it displays our Sample SSRS report.

### #Query

```
SELECT
Sales.CreditCard.CardNumber, Sales.SalesOrderHeaderSalesReason.SalesOrderID,
Sales.SalesOrderHeader.OrderDate, Sales.SalesOrderHeader.DueDate,
Sales.SalesOrderHeader.ShipDate,
Sales.SalesOrderHeader.PurchaseOrderNumber,
Sales.SalesOrderHeader.CustomerID, Sales.SalesReason.Name,
Sales.SalesReason.ModifiedDate, Sales.SalesReason.SalesReasonID
FROM Sales.SalesOrderHeaderSalesReason INNER JOIN
```

Sales.SalesOrderHeader ON

Sales.SalesOrderHeaderSalesReason.SalesOrderID = Sales.SalesOrderHeader.SalesOrderID

INNER JOIN

Sales.SalesReason ON Sales.SalesOrderHeaderSalesReason.SalesReasonID =

Sales.SalesReason.SalesReasonID INNER JOIN

Sales.CreditCard ON Sales.SalesOrderHeader.CreditCardID =

Sales.CreditCard.CreditCardID

1 of 27 Find | Next

### Sample SSRS Report

Purchase Order Number	Customer ID	Modified Date	Name	Card Number	Due Date	Order Date	Sales Order ID	Sales Reason ID
	21768	6/1/2002 12:00:00 AM	Manufacturer	33331901909188	7/13/2005 12:00:00 AM	7/1/2005 12:00:00 AM	43697	5
	21768	6/1/2002 12:00:00 AM	Quality	33331901909188	7/13/2005 12:00:00 AM	7/1/2005 12:00:00 AM	43697	9
	27645	6/1/2002 12:00:00 AM	Manufacturer	33333892454094	7/14/2005 12:00:00 AM	7/2/2005 12:00:00 AM	43702	5
	27645	6/1/2002 12:00:00 AM	Quality	33333892454094	7/14/2005 12:00:00 AM	7/2/2005 12:00:00 AM	43702	9
	16624	6/1/2002 12:00:00 AM	Manufacturer	11118798974023	7/14/2005 12:00:00 AM	7/2/2005 12:00:00 AM	43703	5
	16624	6/1/2002 12:00:00 AM	Quality	11118798974023	7/14/2005 12:00:00 AM	7/2/2005 12:00:00 AM	43703	9
	27621	6/1/2002 12:00:00 AM	Manufacturer	55559698578160	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43706	5
	27621	6/1/2002 12:00:00 AM	Quality	55559698578160	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43706	9
	27616	6/1/2002 12:00:00 AM	Manufacturer	33336603354307	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43707	5
	27616	6/1/2002 12:00:00 AM	Quality	33336603354307	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43707	9
	16351	6/1/2002 12:00:00 AM	Manufacturer	55553413817966	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43709	5
	16351	6/1/2002 12:00:00 AM	Quality	55553413817966	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43709	9
	16517	6/1/2002 12:00:00 AM	Manufacturer	77776782827883	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43710	5
	16517	6/1/2002 12:00:00 AM	Quality	77776782827883	7/15/2005 12:00:00 AM	7/3/2005 12:00:00 AM	43710	9
	27606	6/1/2002 12:00:00 AM	Manufacturer	11111548731015	7/16/2005 12:00:00 AM	7/4/2005 12:00:00 AM	43711	5
	27606	6/1/2002 12:00:00 AM	Quality	11111548731015	7/16/2005 12:00:00 AM	7/4/2005 12:00:00 AM	43711	9
	13513	6/1/2002 12:00:00 AM	Manufacturer	11114486545935	7/16/2005 12:00:00 AM	7/4/2005 12:00:00 AM	43712	5
	13513	6/1/2002 12:00:00 AM	Quality	11114486545935	7/16/2005	7/4/2005	43712	9

Figure 35: Sample SQL Server Reporting Services

### 4.7.2 Linked Reports

[2] A linked report is a report server item that yields an access point to an existing report. It is just like a program short route that you employ to run a program or open a file.

A related report is obtained from an existing report and takes the original's report definition. A linked report always acquires report layout and data source properties of the original report. All other attributes and contexts can be different from those of the original report, letting in security, guidelines, location, subscriptions, and schedules. Making a linked report on the report server when you require to create add versions of an existing report.

#### **Sales Order by Account Number – Linked Report**

##### **#Query**

```
SELECT TOP (1000)
SalesOrderID,
RevisionNumber,
OrderDate,
DueDate,
ShipDate,
Status,
OnlineOrderFlag,
SalesOrderNumber,
PurchaseOrderNumber,
AccountNumber,
CustomerID,
SalesPersonID,
TerritoryID,
BillToAddressID,
ShipToAddressID,
```

```

ShipMethodID,
CreditCardID,
CreditCardApprovalCode,
CurrencyRateID,
SubTotal,
TaxAmt,
Freight,
TotalDue,
Comment,
rowguid,
ModifiedDate
FROM
Sales.SalesOrderHeader
WHERE (CustomerID = @CustomerID)
    
```

Customer ID: 29825 View Report

---

1 of 27 Find | Next

### Sales Order with Account Number

Linked Reports

Sales Account Demographics

Account Number	Sales Order ID	Status	Tax Amt
10-4020-000676	43659	5	1971.5149
10-4020-000676	44305	5	1814.8608
10-4020-000676	45061	5	7032.2178
10-4020-000676	45779	5	1732.0409
10-4020-000676	46604	5	3568.5834
10-4020-000676	47693	5	3174.6895
10-4020-000676	48730	5	3448.5566
10-4020-000676	49822	5	3087.5357
10-4020-000676	51081	5	3525.2833
10-4020-000676	55234	5	4613.1486
10-4020-000676	61173	5	2788.1476
10-4020-000676	67260	5	3765.6618

AccountShippingInfo

Territory ID	Bill To Address ID	Ship To Address ID	Ship Method ID	Order Date	Due Date	Ship Date
5	985	985	985	5 7/1/2005	7/13/2005	7/8/2005
5	985	985	985	5 10/1/2005	10/13/2005	10/8/2005
5	985	985	985	5 1/1/2006	1/13/2006	1/8/2006
5	985	985	985	5 4/1/2006	4/13/2006	4/8/2006
5	985	985	985	5 7/1/2006	7/13/2006	7/8/2006
5	985	985	985	5 10/1/2006	10/13/2006	10/8/2006
5	985	985	985	5 1/1/2007	1/13/2007	1/8/2007

Figure 36: Linked Report Using Account Number

### 4.7.3 Drilldown & Drillthrough Report

Drill down reports at beginning it hide complex difficulty and change the user to toggle subject to condition. Report items to assure how much particular data they want to see. Drill down reports must retrieve all possible data that can be shown in the report.

Large amounts of data. Drillthrough reports are suitable instead of Drilldown.

*“Drillthrough reports [6] are standard reports that are accessed through a hyperlink on a text box in the original report. Drillthrough reports work with a main story and are the target of a Drillthrough action for a report item such as placeholder text or a chart.”*

### Steps to design parameterized reports

Step 1: Right click on the ‘CountryRegionCode’ field and add a child group:

Step 2: Choose Name to group by:

Step 3: Our design view would look like Figure:

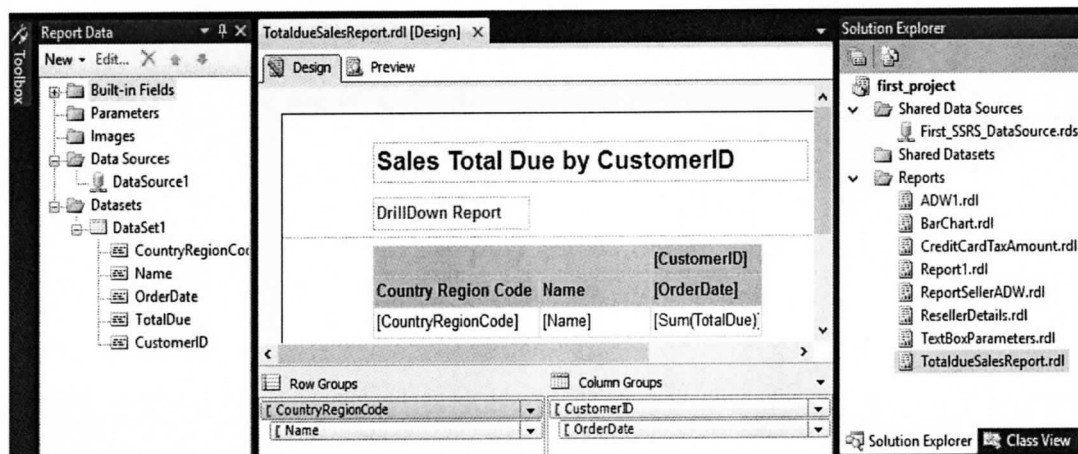


Figure 37: Drill Down Add Child Group

For the visibility toggling features

Tone 5: Click on the row groups - 'CountryRegionRegion' and select the group properties:

Step 6: In the visibility pane, check 'Hide' for ‘when the report is initially run’. Also, check the 'display can be toggled by this report item' for the name

Step 7: Select OK and hit preview. We can able to toggle the report.

### #Query

```

SELECT DISTINCT
TOP (1000)
Person.StateProvince.CountryRegionCode,
Person.StateProvince.Name,
Sales.SalesOrderHeader.OrderDate,
Sales.SalesOrderHeader.
TotalDue,
Sales.SalesOrderHeader.
CustomerID
FROM
Sales.SalesOrderHeader CROSS JOIN Person.StateProvince

```



### Sales Total Due by CustomerID

DrillDown Report

Country Region Code Name	29565	29672	29734	29825	29898	29994
	7/1/2005	7/1/2005	7/1/2005	7/1/2005	7/1/2005	7/1/2005
<input type="checkbox"/> AS American Samoa	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> AU	2361.5540	7286.6440	184329.0060	115766.1695	137552.0545	162374.6620
<input type="checkbox"/> CA	6140.0404	18945.2744	479255.4156	300992.0407	357635.3417	422174.1212
<input type="checkbox"/> DE	3306.1756	10201.3016	258060.6084	162072.6373	192572.8763	227324.5268
<input type="checkbox"/> FM Micronesia	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> FR	45341.8368	139903.5648	3539116.9152	2222710.4544	275104.1090	3117593.5104
<input type="checkbox"/> GB	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> MH	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> MP	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> PW	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> US	25032.4724	77238.4264	1953887.4636	1227121.3967	1458051.7777	1721171.4172
<input type="checkbox"/> VI	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324

Figure 38: Drilldown & Drillthrough Report before elaborating Country Region Code by Customer ID



## Sales Total Due by CustomerID

DrillDown Report

Country Region Code	Name	29565	29672	29734	29825	29898	29994
		7/1/2005	7/1/2005	7/1/2005	7/1/2005	7/1/2005	7/1/2005
<input type="checkbox"/> AS	American Samoa	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> AU	New South Wales	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Queensland	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	South Australia	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Tasmania	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Victoria	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
<input type="checkbox"/> CA	Alberta	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	British Columbia	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Brunswick	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Labrador	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Manitoba	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Newfoundland	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324
	Northwest Territories	472.3108	1457.3288	36865.8012	23153.2339	27510.4109	32474.9324

Figure 39: Drilldown Report & Drill Through after elaborating Country Region Code by Customer ID

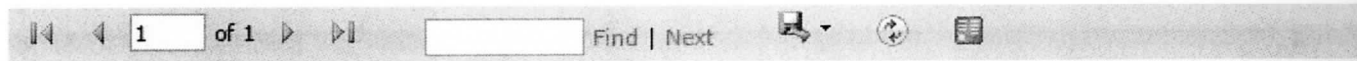
#### 4.7.4 Drilldown Linked Report

##### #Query

```

SELECT TOP (1000)
Sales.CreditCard.CardType,
Sales.CreditCard.CardNumber,
Sales.SalesOrderHeader.TaxAmt,
Sales.SalesOrderHeader.
AccountNumber,
Sales.SalesOrderHeader.
CustomerID
FROM
Sales.CreditCard
INNER JOIN Sales.SalesOrderHeader ON Sales.CreditCard.CreditCardID =
Sales.SalesOrderHeader.CreditCardID

```



### Tax Amount based on CardNumber

Drilldown with linked reports

Card Type	Tax Amt	<u>29773</u>	<u>29637</u>	<u>29813</u>
<input type="checkbox"/> ColonialVoice				
<input type="checkbox"/> Distinguish				
<input type="checkbox"/> SuperiorCard	33334789313841			
<input type="checkbox"/> Vista		11118967710102	11113539543509	

Figure 40: Drilldown Linked Report via Hyperlink

Above figure shows drilldown report before linking the report to another report. The hyperlinked Customer ID provides us move to linked report.

Above report with Customer ID = 11072



## Sales Order with Account Number

### Linked Reports

#### Sales Account Demographics

Account Number	Sales Order ID	Status	Tax Amt	
10-4020-000189	44121		5	6232.6603
10-4020-000189	44788		5	8357.7882
10-4020-000189	45584		5	8030.8017
10-4020-000189	46372		5	5739.8087

#### AccountShippingInfo

Territory ID	Bill To Address ID	Ship To Address ID	Ship Method ID	Order Date	Due Date	Ship Date
1	1017	1017	5	9/1/2005	9/13/2005	9/8/2005
1	1017	1017	5	12/1/2005	12/13/2005	12/8/2005
1	1017	1017	5	3/1/2006	3/13/2006	3/8/2006
1	1017	1017	5	6/1/2006	6/13/2006	6/8/2006

#### PaymentCardInfo

Credit Card ID	Credit Card Approval Code	Currency Rate ID
12214	128195V/83164	
12214	128245V/83164	
12214	128221V/83164	
12214	128194V/83164	

Figure 41: Drilldown Linked Report Hyperlinked to another Report  
(Sales Order with Account Number)

### 4.7.5 Parameterized report

*“A parameterized report [6] uses input values to complete a report or data processing. With a parameterized report, you can vary the output of a report based on the values that are set when the report runs. Parameterized reports are frequently used for Drillthrough reports, linked reports, and Subreports, connecting and filtering reports with related data. “*

#### **Steps to design parameterized reports**

Step 1: Modify the query in the dataset, to make Country Region Code and TerritoryID as a parameter.

Step 2: Once you click OK, go to the parameters folder in “Report Data” - you will see that @Country Region Code and @TerritoyID automatically appear in the "Parameters" Fields.

Step 3: Let’s explore more about the parameter. Image click on @Country Region Code and @TerritoyID. This is place, where we configure, how the parameter should behave - @Country Region Code allows blank values and null values.

Step 4: Click preview, and enter in a Country Region code as (US) and Territory ID as (2).

#### **#Query**

```
SELECT
StateProvinceID,
StateProvinceCode,
CountryRegionCode, I
sOnlyStateProvinceFlag,
Name,
TerritoryID,
rowguid,
ModifiedDate
```

FROM

Person.StateProvince

WHERE

(CountryRegionCode = @CountryRegionCode) AND (TerritoryID = @TerritoryID)

Country Region Code   NULL Territory ID

1 of 1 Find | Next

## Report Categorized by Region AND TerritoryID

### TextBox Parameters

Territory ID	State Province ID	Name	State Province Code	Country Region Code	Is Only State Province Flag	rowguid	Modified Date
2	11	Connecticut	CT	US	False	1e7bb47a-e16b-4968-86fa-45af0211fa84	3/11/2008 10:17:21 AM
2	12	District of Columbia	DC	US	False	a1f3c57e-85b3-41e3-88e8-07244cf087dd	3/11/2008 10:17:21 AM
2	13	Delaware	DE	US	False	7a11ab1d-77c0-4021-9140-8e81f105618e	3/11/2008 10:17:21 AM
2	25	Indiana	IN	US	False	91f21ef0-c528-4310-bb29-6ba45ae75a17	3/11/2008 10:17:21 AM
2	30	Massachusetts	MA	US	False	77d7e754-1b03-4bb3-a4d4-b1e6a21a009e	3/11/2008 10:17:21 AM

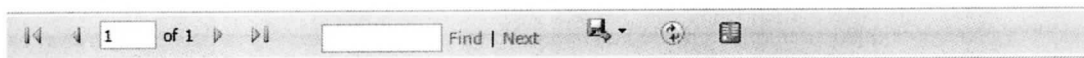
Figure 42: Report with Region AND Territory ID Parameters

### 4.7.6 Bar Chart Report

#### #Query

```

SELECT
Production.TransactionHistory.ProductID AS Expr1,
Purchasing.ProductVendor.StandardPrice, Purchasing.ProductVendor.MinOrderQty,
Purchasing.ProductVendor.MaxOrderQty,
Purchasing.ProductVendor.LastReceiptCost,
Purchasing.ProductVendor.OnOrderQty, Production.TransactionHistory.Quantity,
Production.TransactionHistory.ActualCost, Purchasing.ProductVendor.ProductID
FROM Production.TransactionHistory INNER JOIN
Purchasing.ProductVendor ON Production.TransactionHistory.ProductID =
Purchasing.ProductVendor.ProductID
    
```



### Production Transaction History

#### Bar Chart Report

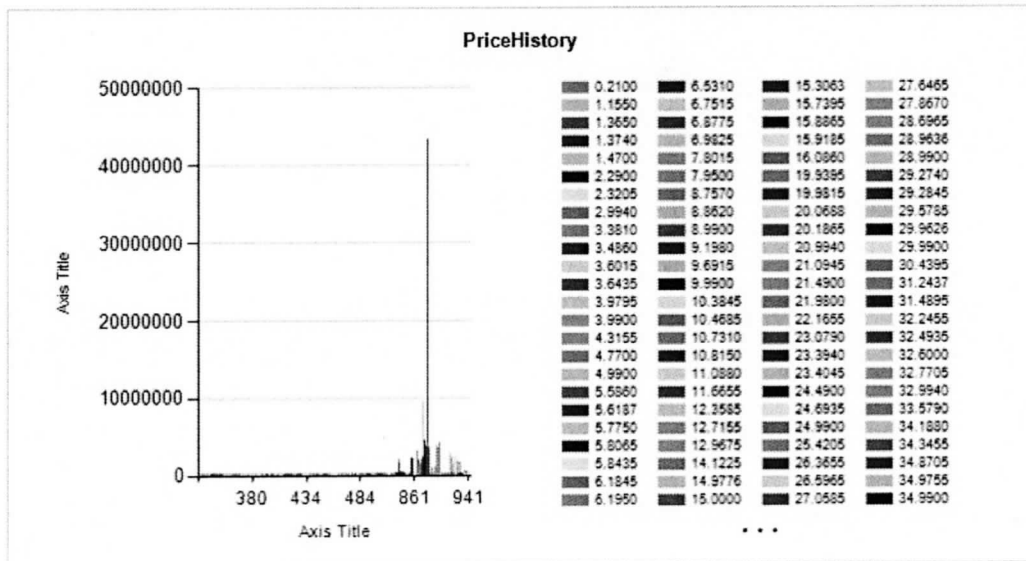


Figure 43: Bar Report of Production Transaction History by Product ID

## CHAPTER 5

### FUTURE WORK

MSBI, for sure will always keep evolving. It's by using Power BI, by minimizing SQL Server reporting Services reports. Functioning SSRS native in lieu of SharePoint. In future SQL Server reporting Services gets along to the new Power BI.

SQL Server reporting Services supports the highly customizable tools, complex data integration and unmatched visual effects to justify various report needs. It constantly improves reporting experience for the users with elegant settings and well- fixed structure to determine the data. It can be employed on an orbit of data accessed by users around the globe.

## REFERENCES

- BCS
- 1] <http://www.bcs.org/upload/pdf/ewrazen-120607.pdf>.
- BusinessIntelligence
- 2] [http://learn-developinformatica.blogspot.com/2014\\_11\\_01\\_archive.html](http://learn-developinformatica.blogspot.com/2014_11_01_archive.html).
- MSDN
- 3] <https://msdn.microsoft.com/en-us/library/ms176064.aspx>.
- Technet.microsoft.com
- 4] [https://technet.microsoft.com/en-us/library/aa933058\(v=sql.80\).aspx](https://technet.microsoft.com/en-us/library/aa933058(v=sql.80).aspx).
- Wikipedia
- 5] [https://en.wikipedia.org/wiki/Microsoft\\_SQL\\_Server](https://en.wikipedia.org/wiki/Microsoft_SQL_Server).
- SSRS Wikipedia
- 6] [https://en.wikipedia.org/wiki/SQL\\_Server\\_Reporting\\_Services](https://en.wikipedia.org/wiki/SQL_Server_Reporting_Services).
- SSRSTutorial <http://ssrstutorials.blogspot.com/2012/07/lesson-3-installing>
- 7] [sampledatabases.html](http://sampledatabases.html).
- Microsoft
- 8] <https://msftdbprodsamples.codeplex.com/downloads/get/165399>.
- SQLMag [http://sqlmag.com/blog/sql-server-database-corruption-part-i-what-](http://sqlmag.com/blog/sql-server-database-corruption-part-i-what-corruption)
- 9] [corruption](http://sqlmag.com/blog/sql-server-database-corruption-part-i-what-corruption).
- SlideShare
- 10] <http://www.slideshare.net/hussain4syed/msbissrs-ppt>.
- MSDNReportingServices
- 11] <https://msdn.microsoft.com/en-us/library/ms159106.aspx>.
- DataWarehouse
- 12] <http://data-warehouses.net/index.html>.



## **APPENDICES**

### **APPENDIX A: USERS' MANUAL**

## SQL Server 2012 Installation User Guide

- a. “Named Instance” and given the instance (server) name. You can change “Instance root directory” if you want. Otherwise, press “Next” button.

**Instance Configuration**  
Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

Default instance  
 Named instance:

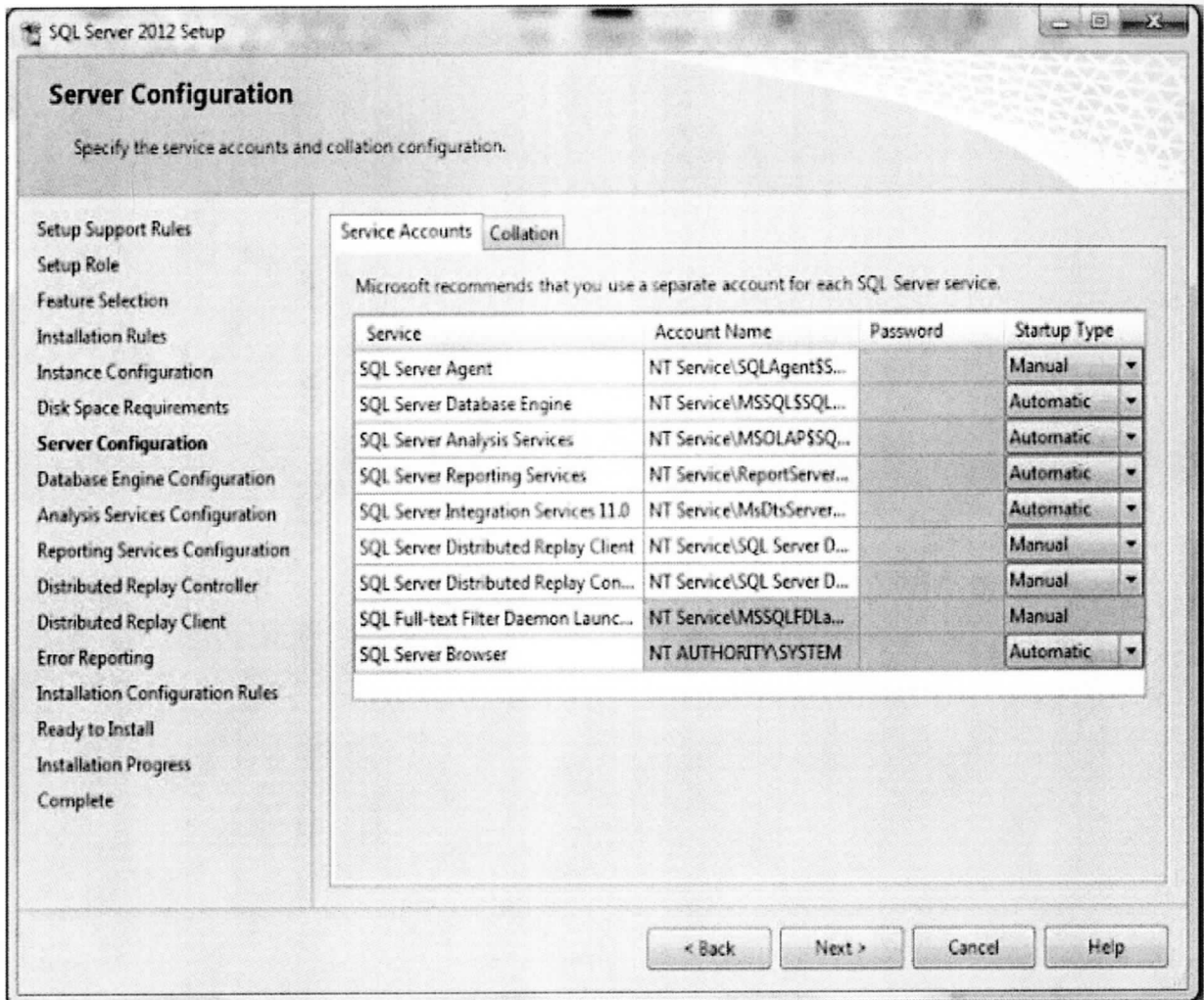
Instance ID:   
 Instance root directory:

SQL Server directory: D:\Program Files\Microsoft SQL Server\MSSQL11.SQL2012  
 Analysis Services directory: D:\Program Files\Microsoft SQL Server\MSAS11.SQL2012  
 Reporting Services directory: D:\Program Files\Microsoft SQL Server\MSRS11.SQL2012

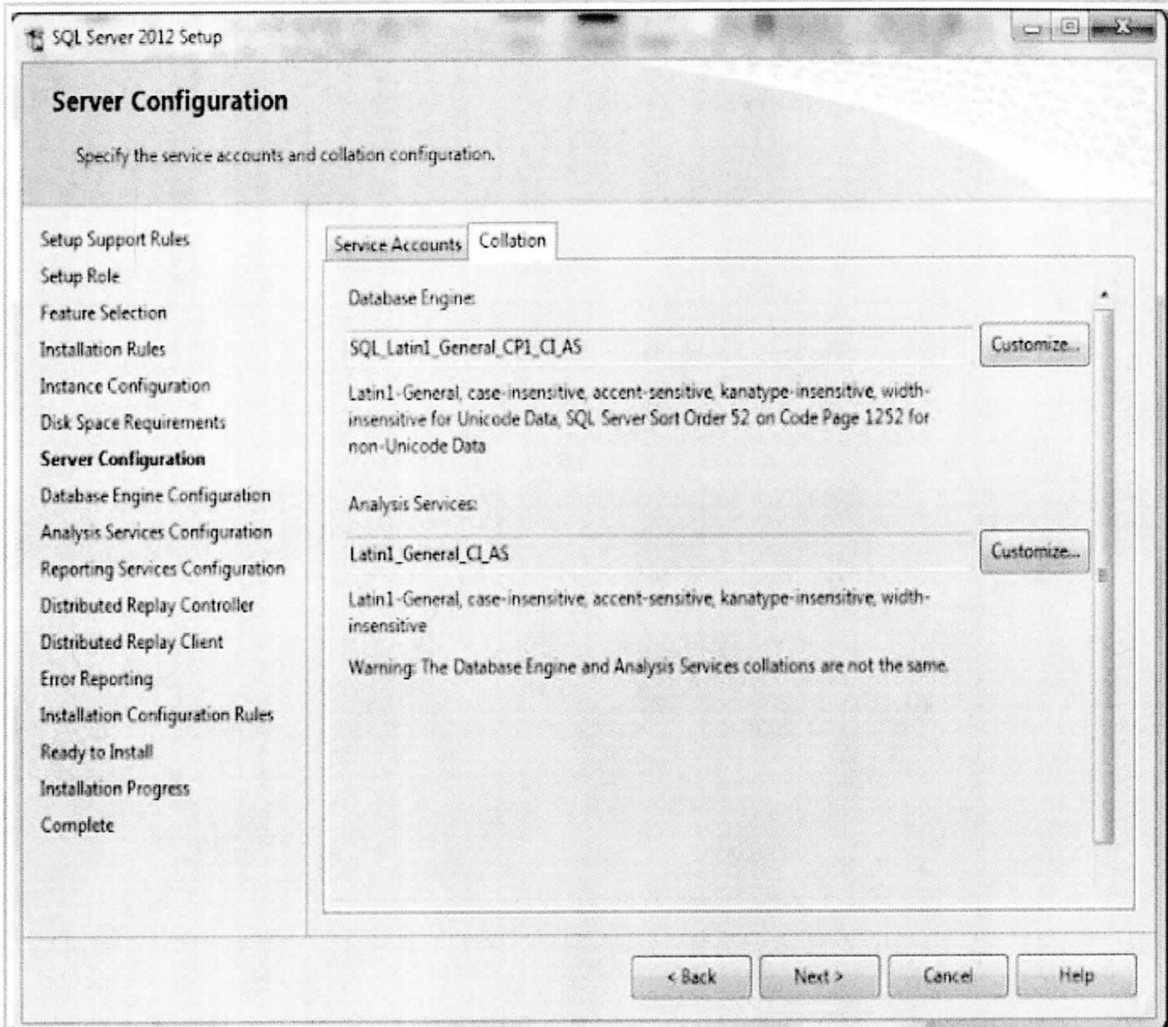
Installed instances:

Instance Name	Instance ID	Features	Edition	Version
SQL2008	MSSQL10.SQL2008...	SQLEngine,SQLEn...	Developer	10.1.2531.0
SQL2008RC2	MSSQL10_50.SQL2...	SQLEngine,SQLEn...	Evaluation	10.50.1352.12
MSSQL SERVER	MSSQL.1,MSSQL 2...	SQLEngine,SQLEn...	Standard	9.3.4035
< Shared Compon...		SSMS, Adv_SSMS, ...		10.50.1352.12
< Shared Compon...		DTS, Tools, Tools\...		9.3.4035

- b. Change the “Startup Type” for SQL services in the tab. Which also can be done in the Control Panel “Services” after installation



## c. "Collation"

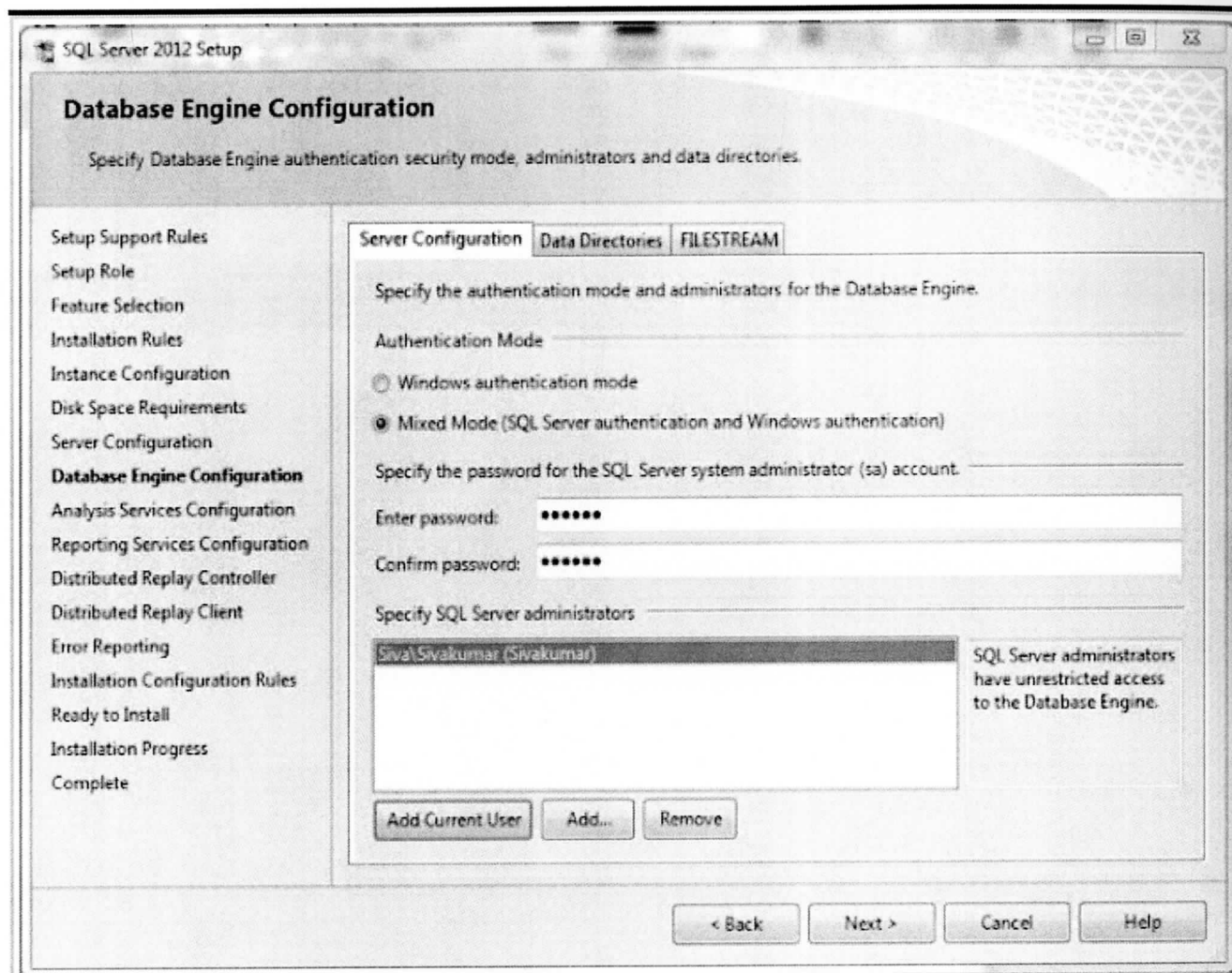


d. Authentication mode and specify the “Administrator” user.

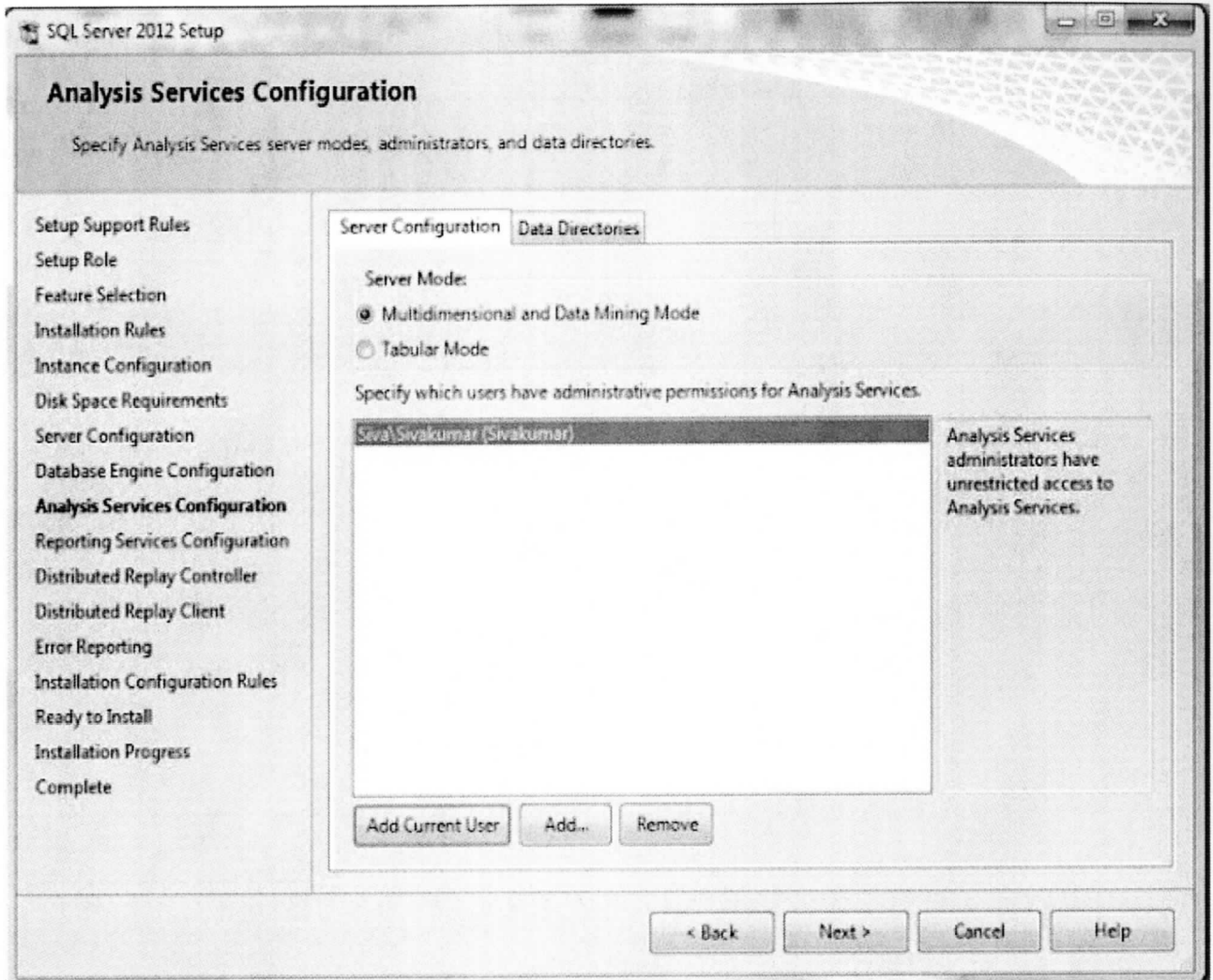
Here, I have selected “Add Current User”.

Also, you can change the “Data Directories” and enable

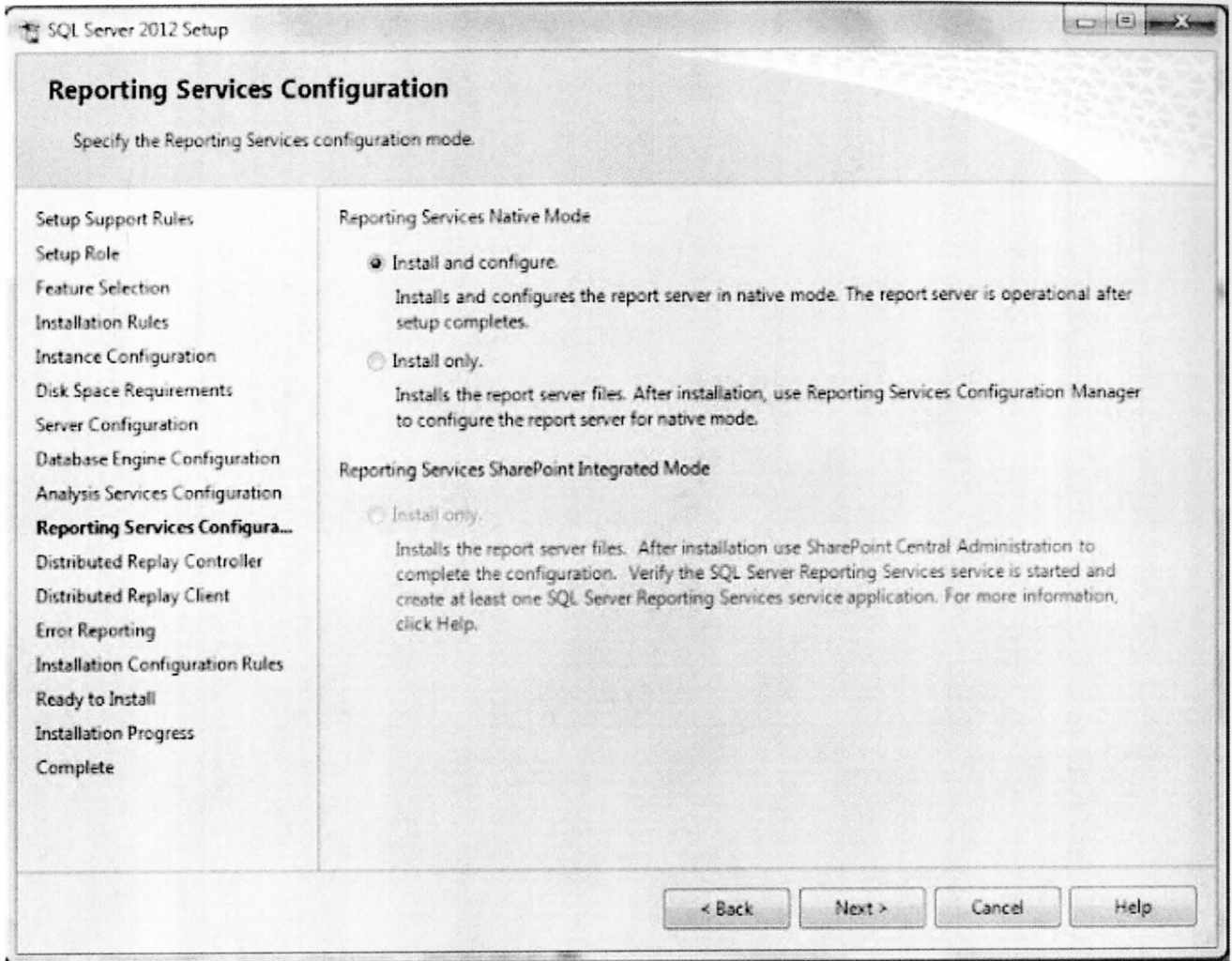
“FILESTREAM” if you want, otherwise Press “Next” button.



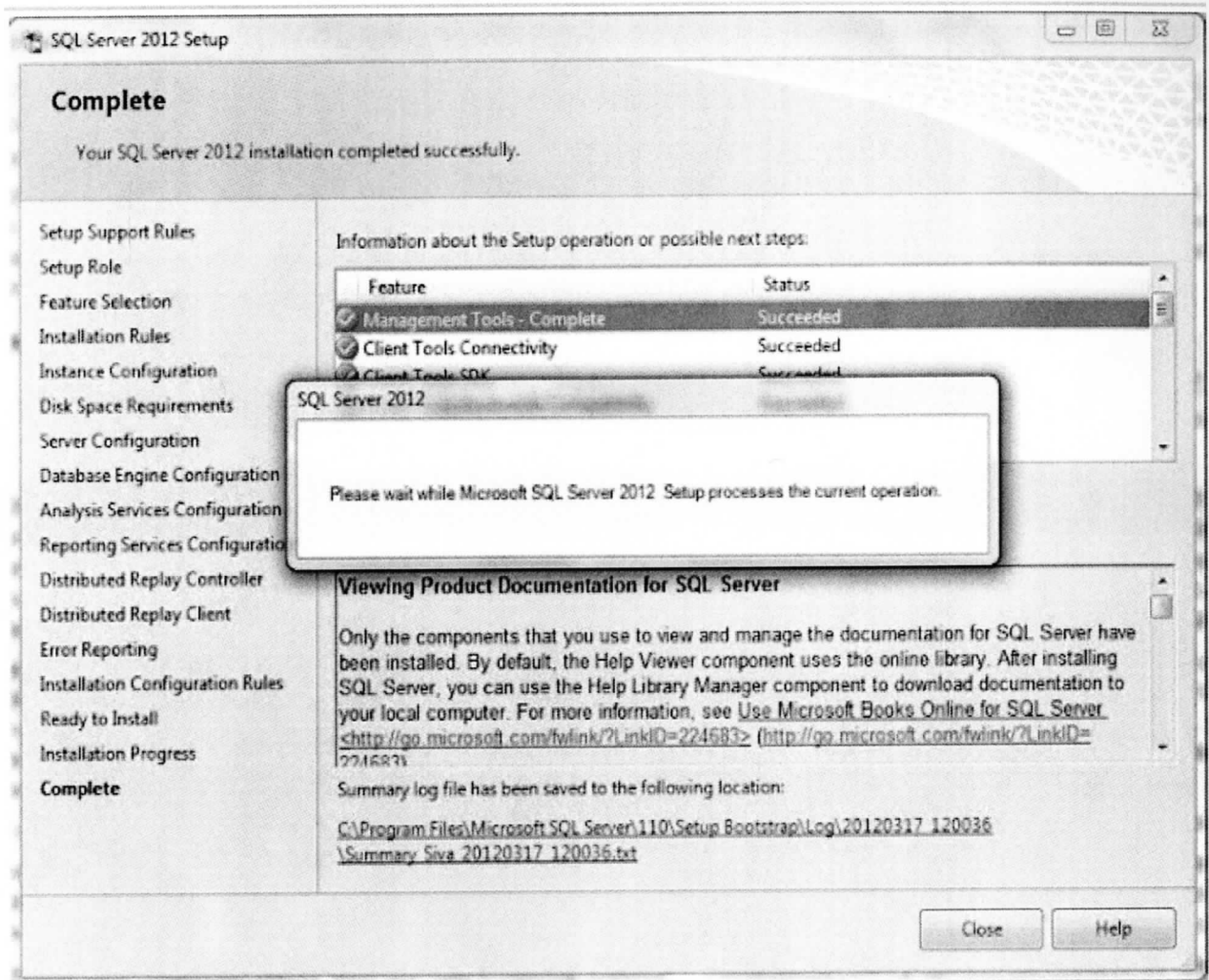
- e. Analysis Services “Server Mode” and “Administrator” user. Here, I have selected “Add Current User”. Also change the “Data Directories” if you want , Otherwise Press “Next” button.



f. Choose “Reporting Services Native Mode”



## g. SQL Server 2012 Installation Setup Completed.





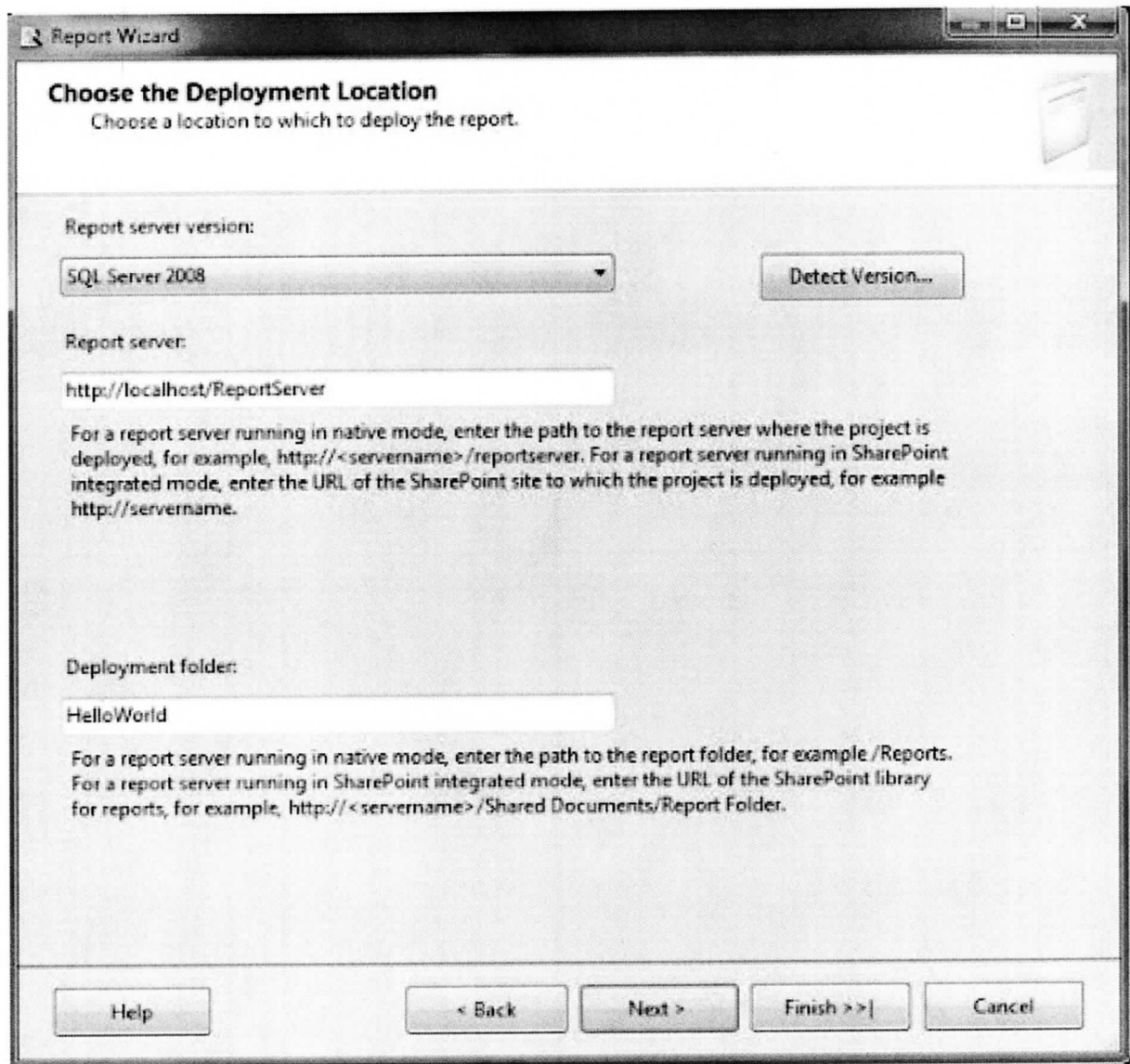
## Configure local report server administration on Windows 8.1 and Windows 10

1. Open a browser window with Run as administrator permissions. From the Start menu, click All Programs, right-click Internet Explorer, and select Run as administrator.
2. Click Allow to continue.
3. In the URL address, enter the Report Manager URL.
4. Click Tools.
5. Click Internet Options.
6. Click Security.
7. Click Trusted Sites.
8. Click Sites.
9. Add `http ://< RAVINDER/DBODS>`.
10. Clear the check box Require server certification (https:)for all sites in this zone if
11. You are not using HTTPS for the default site.
12. Click Add.
13. Click OK.
14. In Report Manager, on the Home page, click Properties.
15. Click New Role Assignment.
16. Type your Windows user account in this format: `<domain>\<user>`.
17. Select Content Manager.
18. Click OK.
19. Click Site Settings in the upper corner of the Home page.
20. Click Configure Site-wide security.
21. Click New Role Assignment.
22. Type your Windows user account in this format: `<domain>\<user>`.
23. Select System Administrator.
24. Click OK.
25. Close Report Manager.
26. Re-open Report Manager in Internet Explorer, without using Run as administrator.

## Setup to Deploy Report Manager URL

Choose the deployment location

[http://ravinder/ReportServer\\_DBODS](http://ravinder/ReportServer_DBODS)



The screenshot shows a Windows dialog box titled "Report Wizard" with the subtitle "Choose the Deployment Location". The main instruction is "Choose a location to which to deploy the report." The dialog is divided into three sections:

- Report server version:** A dropdown menu is set to "SQL Server 2008". To the right is a "Detect Version..." button.
- Report server:** A text box contains "http://localhost/ReportServer". Below it is explanatory text: "For a report server running in native mode, enter the path to the report server where the project is deployed, for example, http://<servername>/reportserver. For a report server running in SharePoint integrated mode, enter the URL of the SharePoint site to which the project is deployed, for example http://servername."
- Deployment folder:** A text box contains "HelloWorld". Below it is explanatory text: "For a report server running in native mode, enter the path to the report folder, for example /Reports. For a report server running in SharePoint integrated mode, enter the URL of the SharePoint library for reports, for example, http://<servername>/Shared Documents/Report Folder."

At the bottom, there are five buttons: "Help", "< Back", "Next >", "Finish >>|", and "Cancel".

Preview the report in Business Intelligence Development Studio

The screenshot shows the 'Report Wizard' dialog box in SQL Server Business Intelligence Development Studio, specifically the 'Completing the Wizard' step. The window title is 'Report Wizard'. The main heading is 'Completing the Wizard' with a sub-instruction: 'Provide a name and click Finish to create the new report.' A small icon of a report is visible in the top right corner.

The 'Report name:' field contains the text 'MYFirstReport'.

The 'Report summary:' section contains the following details:

- Data source: MyDataSource
- Connection string: Data Source=bel7xqd8p1\ssrseexpress;Initial Catalog=AdventureWorks
- Report type: Table
- Layout type: Stepped
- Style: Forest
- Drilldown: Not enabled
- Page: SalesOrderID
- Grouping: SalesOrderDetailID, RevisionNumber
- Details: OrderDate, TerritoryID, BillToAddressID
- Query: 

```
SELECT TOP (1000) Sales.SalesOrderDetail.SalesOrderID, Sales.SalesOrderDetail.SalesOrderDetailID,
Sales.SalesOrderHeader.RevisionNumber,
Sales.SalesOrderHeader.OrderDate, Sales.SalesOrderHeader.TerritoryID,
Sales.SalesOrderHeader.BillToAddressID
```

At the bottom left, there is a checked checkbox labeled 'Preview report'.

The bottom of the dialog features five buttons: 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.