 Microsoft SQL Server Reporting Services (SSRS)

Installation/Configuration Guide for SharePoint Integration Mode

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1. Executive Summary

This document describes the Microsoft SQL Server Reporting Services (SSRS) Installation and Configuration for SharePoint Integration Mode.

1. Introduction
   1. Purpose

The purpose of this document is to guide the user to install and configure SSRS for SharePoint integration mode.

* 1. Audience

This document/guide is intended for Administrators or Users who manage SSRS and Microsoft Office SharePoint Server 2007 (MOSS 2007).

* 1. Reporting Services

SQL Server 2005 Reporting Services is a server-based reporting platform that you can use to create and manage tabular, matrix, graphical, and free-form reports that contain data from relational and multidimensional data sources. The reports that you create can be viewed and managed over a World Wide Web-based connection. Reporting Services includes the following core components:

* A complete set of tools that you can use to create, manage, and view reports.
* A Report Server component that hosts and processes reports in a variety of formats. Output formats include HTML, PDF, TIFF, Excel, CSV, and more.
* An API that allows developers to integrate or extend data and report processing in custom applications, or create custom tools to build and manage reports.
  1. SharePoint Integration Mode

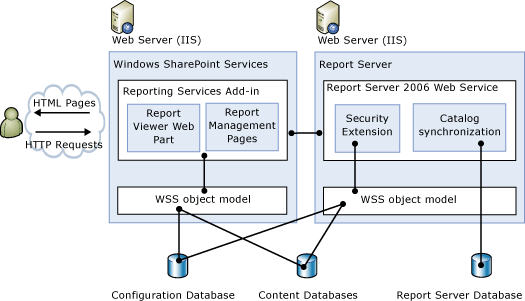
You can configure a report server to run within a deployment of a SharePoint product or technology and use the collaboration and centralized document management features of Windows SharePoint Services 3.0 or Office SharePoint Server 2007 with Reporting Services. Running a report server as part of a larger SharePoint deployment provides these levels of integration:

* Shared storage.
* Shared security.
* Same site access for all business documents, including reports, report models, and shared data sources.
  + 1. Server Integration Architecture

When you integrate a report server with an instance of a SharePoint product or technology, items and properties are stored in the SharePoint content databases. This provides a deeper level of integration between the server technologies that effects how content is stored, secured, and accessed.

Storing report items and properties in SharePoint content databases allows you to browse SharePoint libraries for report server content types, secure items using the same permission levels and authentication provider that controls access to other business documents hosted on a SharePoint site, use the collaboration and document management features to check reports in and out for modification, use alerts to find out if an item has changed, and embed or customize the Report Viewer Web part on pages and sites within the application. If you have sufficient permissions within a SharePoint site, you can also generate report models from shared data sources and use Report Builder to create reports

The report server continues to provide all data processing, rendering, and delivery. It also supports all scheduled report processing for snapshots and report history. The following diagram shows how the server components work together:



When you open a report from a SharePoint site, the report server proxy endpoint connects to a report server, creates a session, prepares the report for processing, retrieves data, merges the report into the report layout, and displays it in the Report Viewer Web part. While the report is open, you can export it to different application formats, or interact with data by drilling into underlying numbers or clicking through to a related report. Export and report interaction operations are performed on the report server.

The report server synchronizes operations and data with Windows SharePoint Services and tracks information about the files it processes. When you modify properties or settings for any report server item, the change is stored in a SharePoint database and then copied to a report server database that provides internal storage to a report server.

* + 1. Components That Provide Integration

To combine the servers in a single deployment, you integrate an installation of Microsoft SQL Server 2005 Reporting Services with an instance of Windows SharePoint Services or Office SharePoint Server 2007.

Integration is provided through SQL Server 2005 Service Pack 2 and the SQL Server 2005 that reports Services Add-in for SharePoint Technologies. The Reporting Services Add-in is a freely distributable component that you can download from a Microsoft Web site and then install on a server that is running Windows SharePoint Services 3.0 or Office SharePoint Server 2007.

* On Windows SharePoint Services, the Reporting Services Add-in provides a URL proxy endpoint, a Report Viewer Web part, and application pages so that you can view, store, and manage report server content on a SharePoint site or farm.
* On the report server, Service Pack 2 provides updated program files, a new SOAP endpoint, custom security and delivery extensions, a revised Reporting Services Configuration tool, scripts for granting access to SharePoint configuration and content databases, and a script for creating a report server database that supports SharePoint integrated mode. The report server must be configured to run in SharePoint integrated mode, dedicated exclusively to supporting report access and delivery through your SharePoint site.

After you install the Reporting Services Add-in on Windows SharePoint Services and configure the two servers for integration, you can upload or publish report server content types to a SharePoint library, and then view and manage those documents from a SharePoint site. Uploading or publishing report server content is an important first step; the Web Part and pages become available when you select report definitions (.rdl), report models (.smdl) and shared data sources (.rsds) on a SharePoint site.

Reference: SQL Server 2005 Books Online

1. Requirements for Running Reporting Services in SharePoint Integrated Mode

You can integrate Microsoft SQL Server 2005 Reporting Services with Windows SharePoint Services or Office SharePoint Server by configuring a report server to run in SharePoint integrated mode and by installing a Reporting Services Add-in that adds infrastructure and application pages to a SharePoint Web application.

The following versions and editions can be used to support integrated operations:

* SQL Server 2005 Reporting Services with Service Pack 2. You cannot integrate a report server instance that is running earlier versions of the software.  
    
  Supported editions include Evaluation, Standard, Developer, and Enterprise. There is no support for this feature in the Workgroup Edition or in SQL Server 2005 Express with Advanced Services.
* Windows SharePoint Services 3.0 or Microsoft Office SharePoint Server 2007. If you are using Office SharePoint Server , you must have the Office Server Premium or the Office Server Standard Edition.
* Reporting Services Add-in for SharePoint Technologies. The add-in must be installed on the instance of the SharePoint technology you are using. There is only one version of the Reporting Services Add-in.
  1. Permission Requirements

You must be a member of the local administrators group to run Setup. You must run Setup on the local computer; you cannot run Setup remotely to apply SP2 or install the Reporting Services Add-in.

* 1. Web Site Requirements

If you are running a side-by-side deployment of both server products on the same Web server, you must create a custom Web site for the report server or configure the default Web site to run under a different port.

* 1. Report Server Requirements

In addition to SP2 and edition requirements, a report server instance must have a local installation of the Windows SharePoint Services object model. To determine whether the object model is present, Setup checks the registry for HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Shared Tools\Web Server Extensions\12.0 with **Sharepoint** set to **Installed**.

The Windows SharePoint Services object model is used to join the report server to a SharePoint farm. The object model stores a pointer to the configuration database of the SharePoint technology instance that the report server connects to. All connections from the report server to the SharePoint technology instance are made through the object model.

* 1. Reporting Services Add-on Requirements

A deployment of Reporting Services integrates with a deployment of a SharePoint product or technology at the farm level. If you have multiple SharePoint Web applications in a farm configuration, you must install the Reporting Services Add-in on each computer that has a Web front-end. After you have installed the add-in on all computers, start Central Administration to configure report server integration for all the servers in the farm.

Reference: SQL Server 2005 Books Online

1. Lab Environment
   1. Servers

This installation and configuration guide is based on the hands-on in a lab environment. The lab environment is a MOSS 2007 Server Farm with the following servers:

* Domain Controller
* SQL Server
* Front-End Web Server
* Application Server
* Report Server

The SharePoint Central Administration Web Application is hosted on Application Server and NOT on Front-End Web Server.

* 1. Software used

The following software used to install and configure Reporting Services for SharePoint Integration Mode:

* .NET Framework 3.0
* SQL Server 2005
* SQL Server 2005 SP2
* Reporting Services Add-in

It is recommended that you make these software files available prior to installation.

* 1. Domain Accounts

Two domain accounts have been created for the configuration:

1. **MYDOMAIN\SSRSWindowsAccount** (for Windows Service Account)
2. **MYDOMAIN\SSRSWebAccount** (for Web Service Account)

The MOSS 2007 Server Farm Account MYDOMAIN\SVRFarmAccount has been used to install and configure Reporting Services and MOSS 2007 software.

It is recommended that you create these domain accounts prior to installation and one account may also be used for both services.

* 1. Report Server Web Site

A new web site has been created in IIS on Report Server namely “**RS Web Site**” on port **8080** and this web site would be used to host Report Server virtual directory.

It is recommended that you create this web site prior to install. This web site by default would use Default App Pool and this will be changed during Reporting Services Configuration.

1. Installation/Configuration Steps

| **Step** | **Server** | **Description** | **Screenshot/Notes** |
| --- | --- | --- | --- |
| **1** | DC | Create Domain Accounts for Reporting Services | MYDOMAIN\SSRSWindowsAccount  MYDOMAIN\SSRSWebAccount |
| **2** | RS | Create Web Site to host Report Server Virtual Directory |  |
| **3** | RS | Add SharePoint Server Farm Domain Account to local administrators group. | MYDOMAIN\SVRFarmAccount to Administrators group. This is needed in order to install and configure Reporting Services and MOSS 2007. |
| **4** | RS | Login as MYDOMAIN\SVRFarmAccount | This step is required to install and configure Reporting Services and MOSS 2007 sucessfully. |
| **5** | RS | Install .NET Framework 3.0 |  |
| **6** | RS | Install SQL 2005 Reporting Services | Run SQL 2005 Setup and select the Server components, tools, Books Online, and samples Install option. |
|  |  |  | Accept the License Agreement to proceed with the setup. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  | It may not be necessary to select sample databases and sample code/applications unless this server may be used for developing reports. |
|  |  |  | If there would be more than one SQL instance then Named instance will be used otherwise Default instance will be used for Report Server. In the lab, Default instance was used. |
|  |  |  | The MYDOMAIN\SSRSWindowsAccount is used as the Service Account for Reporting Services. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  | The Reporting Services component has been installed. |
| **7** | RS | Install SQL 2005 Reporting Services SP2 | SQL 2005 SP2 – Reporting Services adds support for SharePoint Integration Mode. Run SQL 2005 SP2 setup program to upgrade Reporting Services. |
|  |  |  |  |
|  |  |  | Accept the License Terms to proceed with the setup. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  | If any service or application was running and required to be closed by the setup then the service or application needs to be stopped. Use Services Manager to stop the service and Task Manager to end the application. There may be more than one service or application needed to be closed. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  | Uncheck “Launch the User Provisioning Tool for Windows Vista after SP2 installation completes” checkbox and press Finish to complete the setup. |
| **8** | RS | Install MOSS 2007 | Run MOSS 2007 setup program.    Enter Product Key. |
|  |  |  | Accept the License Terms to proceed with the install. |
|  |  |  | Click on Advanced button and choose Web Front End role for this server. |
|  |  |  |  |
|  |  |  |  |
|  |  |  | Click on Close button to finish the install and run the configuration wizard. |
| **9** | RS | Configure MOSS 2007 |  |
|  |  |  | Click Yes to close the services in order to configure MOSS 2007. |
|  |  |  | Select “Yes, I want to connect to an existing server farm” to add this Report Server to the existing MOSS 2007 Server Farm. |
|  |  |  | Enter Database server name and click on “Retrieve Database Names”  button.  Select the correct MOSS 2007 configuration database from Database name drop-down list box.  Enter MOSS 2007 Server Farm account and password. |
|  |  |  | Click on “Advanced Settings” button and select “Do not use this machine to host the web site” option to configure NOT to host Central Administration on RS Server. |
|  |  |  |  |
|  |  |  |  |
|  |  |  | Click Finish to complete the configuration. Once the configuration was successful, the Central Administration Web Application will be displayed. |
|  |  |  | The Windows SharePoint Services Incoming E-mail service on RS server may be stopped. But Windows SharePoint Services Web Application service is required. |
| **10** | RS | Configure Reporting Services | Run Reporting Services Configuration Tool.    Confirm machine name and instance name to connect. |
|  |  |  | This screen is displayed once the connection is made to Report Server. |
|  |  |  | The “RS Web Site” will host Report Server Virtual Directory.  Click on “New…” button and select “RS Web Site” and Report Server as the Virtual Directory. |
|  |  |  |  |
|  |  |  | Report Manager Virtual Directory is not used for SharePoint Integration Mode.    This screen is used to configure Windows Service Identity. MYDOMAIN\SSRSWindowsAccount is used as the Windows Service Identity and this is used under which the Report Server Windows service runs.  The Report Server Windows service performs initialization, reversible encryption, database maintenance tasks, and all scheduling and delivery. The service runs in the background. It performs end-to-end processing for reports that run on a schedule (specifically, it creates report snapshots and runs subscription reports).  Because it performs all encryption operations, the Report Server Windows service must be running whenever you specify or use encrypted values. Specifying stored credentials, running a report that uses stored credentials, and publishing a report to a report server (data source information is encrypted) are all operations that require the Report Server Windows service |
|  |  |  | This screen is used to configure Web Service Identity.  MYDOMAIN\SSRSWebAccount is used as the Web Service Identity.  The Report Server Web service performs end-to-end processing for reports that run on demand. It is also provides the primary programmatic interface for applications that integrate with a report server. |
|  |  |  | This screen is used to create a report server database in SharePoint integrated mode and configure the connection from the report server to the report server database. Only the report server connects to the report server database. The Windows SharePoint Services or Office SharePoint Server instance that you are integrating the report server with never connects to or retrieves data from the report server database directly.  When created for SharePoint integrated mode, the report server database stores server properties, report execution snapshots, report history, subscription definitions, and schedules. It stores a secondary copy of reports, report models, shared data sources, and resources to improve processing performance on the server. Primary storage for report documents is in the SharePoint content databases.   * Select Server Name from drop-down list box and click on “Connect” button. * Click on “New…” button to create a new Report Server database. * Select the default database name “Report Server” and make sure that “Create the report server database in SharePoint integrated mode” check box is selected. * Press OK to create database creation script. * Press OK on the SQL Server Connection dialog to use the Current User – Windows Identity. |
|  |  |  |  |
|  |  |  | Once the database script is created,   * Select “Windows Credentials” as Credentials Type * Enter MYDOMAIN\SSRSWindowsAccount as Account Name * Enter the password * Click on “Apply” button |
|  |  |  | Backup the Encryption Keys to a key file (.snk) with a password.  Reporting Services stores encrypted values in the report server database and in configuration files. Most encrypted values are credentials that are used for accessing external data sources that provide data to reports.  The following values are encrypted:   * Connection information and credentials used by a report server to connect to a report server database that stores internal server data.  These values are specified and encrypted during setup or report server configuration. You can update the connection information at any time using the Reporting Services Configuration tool or the **rsconfig** utility. Encryption of configuration settings is performed by using the machine-level key of the local computer that is available to all users. Encrypted report server connection information is stored in the rsreportserver.config file (no other configuration file contains encrypted settings). * Stored credentials that are used by a report server to connect to external data sources that provide data to a report.   These values are defined when you configure data source information for a report, and then stored as encrypted values in a report server database. The report server uses a symmetric key to encrypt and decrypt this data. * The symmetric key used for encryption.   This value is created during setup or server configuration, and then stored as an encrypted value in the report server database. The Report Server Windows service uses this key to encrypt and decrypt data that is stored in the report server database.   The “SharePoint Integration” will have an “X” and this is normal since the service accounts have not been granted access to SharePoint configuration and content databases. After installing Report Services Add-in, this would be green and will have a link to SharePoint Central Administration, |
| **11** | RS | Run IISRESET |  |
| **12** | RS | Open http://moss2007-rs:8080/reportserver | You should see the web sites listed. If there was any error then make sure that RSAppPool is running.  Make sure that the URL has your server name. |
| **13** | AS | Install Reporting Services Add-in | Download Reporting Services Add-in for SharePoint from Microsoft download site.  Run the setup. |
|  |  |  | Accept the License Agreement to proceed with setup. |
|  |  |  | Press “Install” button to start the installation. |
|  |  |  |  |
|  |  |  | Press “Finish” button to complete the installation. |
| **14** | WFE | Install Reporting Services Add-in | Follow Step 13 to install.  Make sure that you install Reporting Services Add-In on all WFE servers and servers running Central Administration Web Application. |
| **15** | AS | Run IISRESET |  |
| **16** | WFE | Run IISRESET |  |
| **17** | RS | Run IISRESET |  |
| **18** | AS | Open <http://moss2007-rs:8080/reportserver> | Make sure that you can get to this site. If not, do not proceed and check your installation and RSAppPool on RS Server. |
| **19** | WFE | Open <http://moss2007-rs:8080/reportserver> | Make sure that you can get to this site. If not, do not proceed and check your installation and RSAppPool on RS Server. |
| **20** | AS | Configure Reporting Services Add-in | Open SharePoint Central Administration Web Application and this can be done on either of the RS, AS, or WFE server.    Click on “Manage integration settings” link under Reporting Services section in Application Management. |
|  |  |  | Enter Report Server Web Service URL and select Authentication Mode as “Trusted Account” this mode has to be used if Kerberos is not enabled. |
|  |  |  | Select “Grant database access” link from Reporting Services section of Application Management. This option pulls the service accounts information from Report Server and grant them the configuration and content database(s) access in SharePoint. |
|  |  |  | Enter the Report Server Name and press OK. This would prompt for an account which will be used to pull the service accounts information from Report Server. MYDOMAIN\SVRFarmAccount was used for this purpose. |
|  |  |  | Press OK to pull the service accounts information from Report Server and grant database access to them. |
|  |  |  | Select “Set server defaults” link from Reporting Services in Application Management. This page is used to set Reporting Services Server default values. |
|  |  |  |  |
| **21** | The Reporting Services and Reporting Service Add-in have been installed and configured. Optionally Sample Report database and reports can be deployed to SharePoint and tested. | | |

1. Conclusion

This document describes the steps involved in installing and configuring Reporting Services and Reporting Services Add-in. Your environment may be different, and you want to refer SQL Server 2005 Books Online (latest) for full documentation on how to install and configure.

1. References

|  |  |
| --- | --- |
| **Reference** | **Location** |
| **SQL Server 2005 Books Online (May 2007)** | <http://www.microsoft.com/downloads/details.aspx?familyid=BE6A2C5D-00DF-4220-B133-29C1E0B6585F&displaylang=en> |
| **SQL Server 2005 SP2** | <http://www.microsoft.com/downloads/details.aspx?familyid=D07219B2-1E23-49C8-8F0C-63FA18F26D3A&displaylang=en> |
| **SQL Server 2005 Reporting Services Add-in for Microsoft SharePoint Technologies** | <http://www.microsoft.com/downloads/details.aspx?familyid=1E53F882-0C16-4847-B331-132274AE8C84&displaylang=en> |