Configuring Remote Blob Storage (RBS) for SharePoint

Enabling RBS with FILESTREAM Step by Step Guide

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He has been awarded with the Microsoft Most Valuable Professional (MVP) award since 2007 for his contributions to the worldwide SharePoint community. He is a co-founder of the New Zealand SharePoint user group in 2006 and actively coordinates SharePoint User Group events in New Zealand. He is also one of the co-founders of the annual New Zealand Community SharePoint Conference which had its first event in 2009.

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Steve Smith (MVP-SharePoint Server) is the owner of Combined Knowledge in the UK and Combined Knowledge Asia Pacific providing Microsoft SharePoint Technical Training courses and Consultancy.

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Configuring Remote Blob Storage (RBS) for SharePoint – Step by Step Guide

The following guide outlines steps to configure RBS using the FILESTREAM provider of SQL Server 2008 or 2008 R2 for a SharePoint 2010 web application and associated content database. In this example SQL Server 2008 R2 Enterprise Edition is used.

Considerations for using RBS with FILESTREAM

There are many reasons why you should and should not use RBS. The decision to use RBS must not be made lightly since it affects your overall farm management model. This guide is a guide only and not an endorsement to use RBS in your deployment. We hope that you can use the guide to test and configure RBS and make an informed decision.

DO NOT USE THIS GUIDE FOR A PRODUCTION DEPLOYMENT UNTIL YOU HAVE PROVED AND EVALUATED THE USE OF RBS.

Scenarios covered in this guide

- Setup and configure FILESTREAM and RBS for a new content database.
- Configure RBS for an existing content database and site collection.
- Disable RBS from a content database.

General considerations for using the guide

- These instructions assume that you are using the FILESTREAM RBS provider. If you are using a different RBS provider, refer to that provider's instructions for configurations.
- A SharePoint Server Farm configured and tested to be operational (In the example, the steps are based on a server farm with three servers).
- The correct version of the RBS provider for the SQL Server Edition (In this sample the download was obtained from http://go.microsoft.com/fwlink/?LinkID=177388) Look for "*Microsoft® SQL Server® 2008 R2 Remote Blob Store*".
- RBS can only be used for content databases in SharePoint Server 2010.
- Implementing RBS with the FILESTREAM provider on a remote SQL Server to be used by SharePoint requires SQL Server Enterprise Edition.
- RBS is most suited for 'infrequent access' scenarios such as 'archival' of content.
- The FILESTREAM provider is supported when it is used on local hard disk drives only (i.e.: No NAS is supported).
- Files that are stored using RBS cannot be directly accessed.

Sample server deployment

- SPAPP1 – SharePoint application server
- SPWFE1 – SharePoint web server
- SPSQL1 (The SQL server is configured to use a DNS name 'SQLCORE')

You will need to carry out configurations on all servers in order for RBS to work.

Steps to enable RBS

In this setup guide a web application named http://homebase.knowledgecue.com is used to host a number of site collections. The web application currently has two content databases. The root site is located in 'SP_CONTENT_HOMEBASE_KC' content database. An additional content database is used for another site collection. A third (*new) database will be created to enable RBS and store data on the file system.

Logical view of enabling RBS
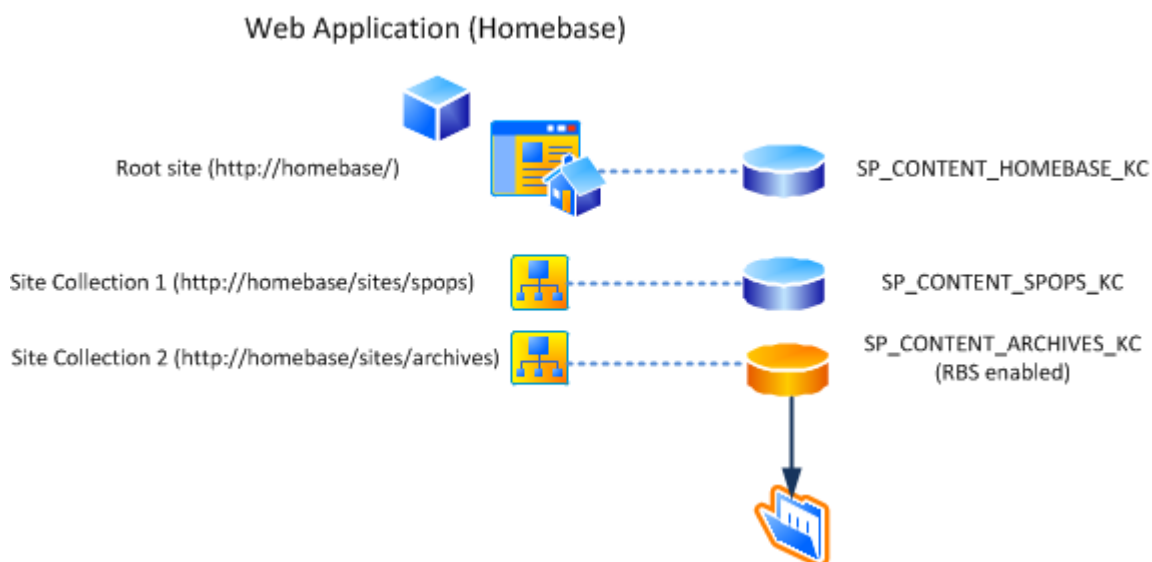
The overall high level steps are:

1. Enable FILESTREAM provider on SQL Server.
2. Create a new content database.
3. Create a new site collection to be housed in the new content database.
4. Configure the content database to use RBS with FILESTREAM.
5. Install the RBS provider on the SQL server.
6. Install the RBS provider on all SharePoint servers.
7. Run the required PowerShell cmdlets to enable the content database to use RBS.
8. Test that content uploaded ends up in the specified file directory.

In the examples the following names are used.

- RBS Content DB = SP_CONTENT_ARCHIVES_KC
- SharePoint Farm Account = knowledgecue\svcsp14farmservice
- SharePoint Setup Account = knowledgecue\svcsp14setup
- SQL Server = SQLCORE
- Web Application - http://homebase.knowledgecue.com

1. **Enable FILSTREAM in SQL Server**

In this part the SQL server used for RBS will be configured with FILESTREAM
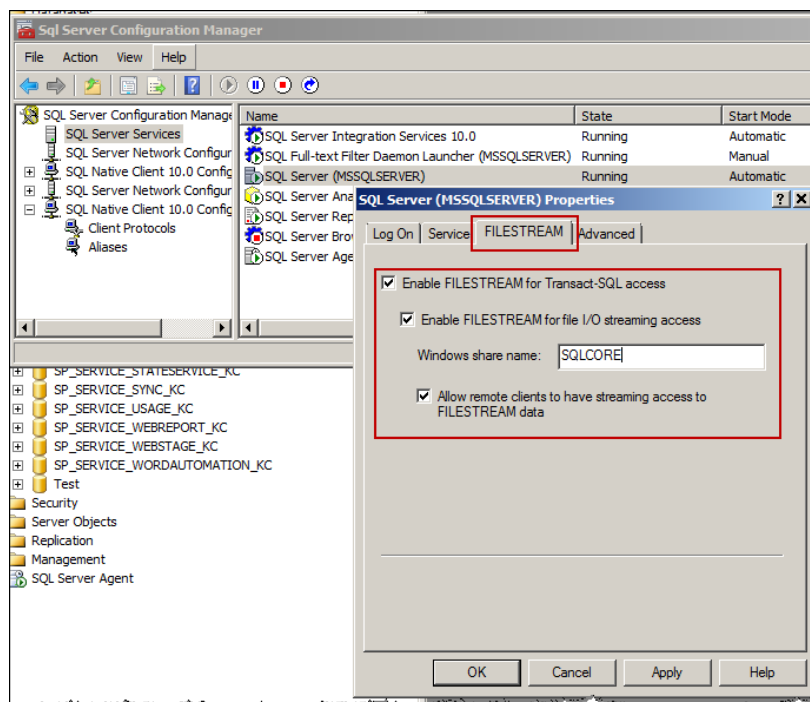
1. Open SQL Server Configuration Manager
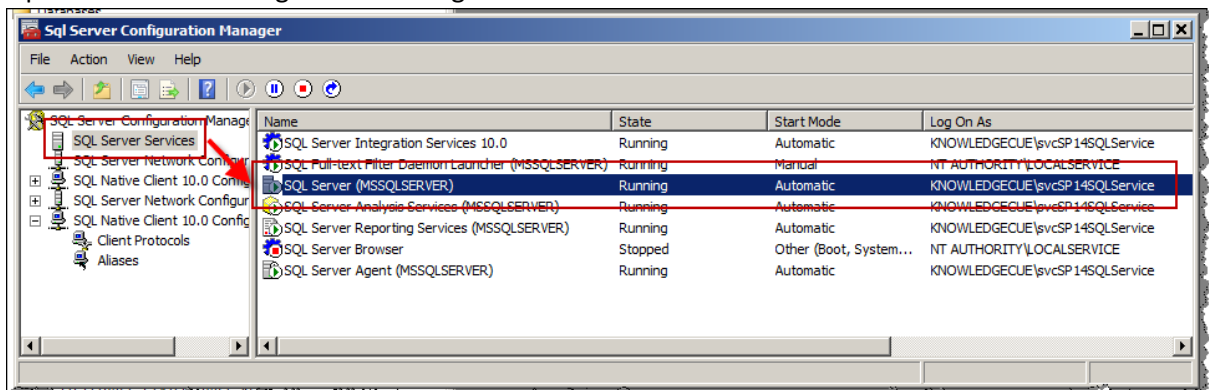
2. Right click 'SQL Server' (highlighted) and select properties
3. In the FILESTREAM tab select all of the options
   - Enable FILESTREAM for Transact-SQL access
   - Enable FILESTREAM for file I/O streaming access
   - Windows Share Name = 'SQLCORE' (Use a sensible name)
   - Allow remote clients to have streaming access to FILESTREAM data

4. Click 'Apply' then 'OK' to configure
5. Open SQL Server Management Studio and execute the following command

```
EXEC sp_configure filestream_access_level, 2
RECONFIGURE
```

2. Create a content database

This is the content database used for the site collection. This content database will be set to a pre-grown size of 50MB with auto grow size of 50MB and 10MB log growth.

*Note: If you want to enable RBS on an existing content DB skip this part and go to '**4. Configure the content database to use RBS**' section below.

1. Open SQL Server Management Studio and on the Databases node right click and create a new database with the following settings
    a. Database name - SP_CONTENT_ARCHIVES_KC
    b. Database owner – knowledgecue\svcsp14farmservice (Farm service account)
    c. Initial Size of 50MB
    d. Enable Autogrowth with File Growth in Megabytes (50MB)
    e. Maximum File Size with Restricted File Growth of 500MB
   f. Collation Setting - Latin1_General_CI_AS_KS_WS
    g. Recovery model – Full
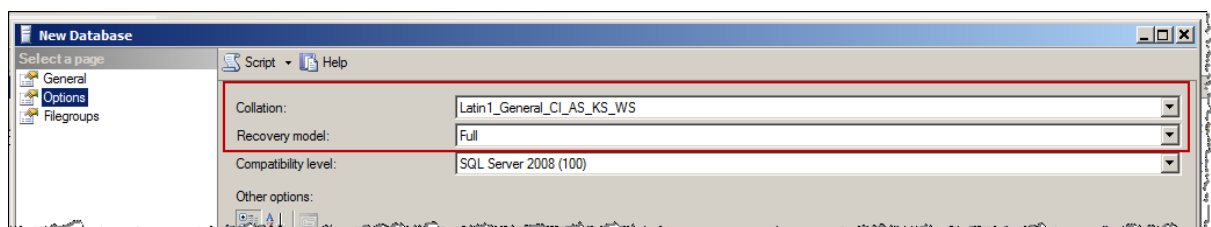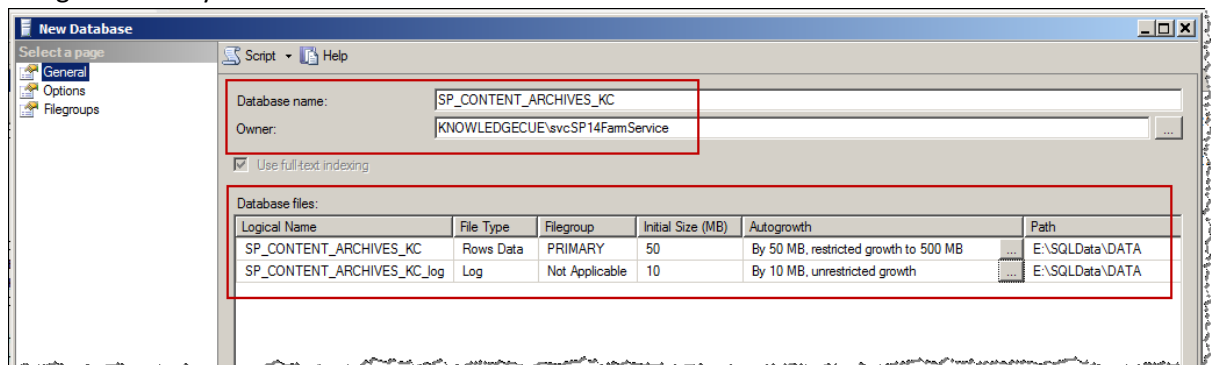
2. Add the SharePoint setup account (knowledgecue\svcsp14setup) to have dbowner access to the database created above.

*Note that you will need to make sure you have correctly identified appropriate database settings for your scenario. For general guidance for database sizing and Autogrowth please refer to: http://technet.microsoft.com/en-us/library/cc298801.aspx Always consult your DBA in your deployment to ensure that SQL server is maintained and operated as per required guidelines in your organisation.
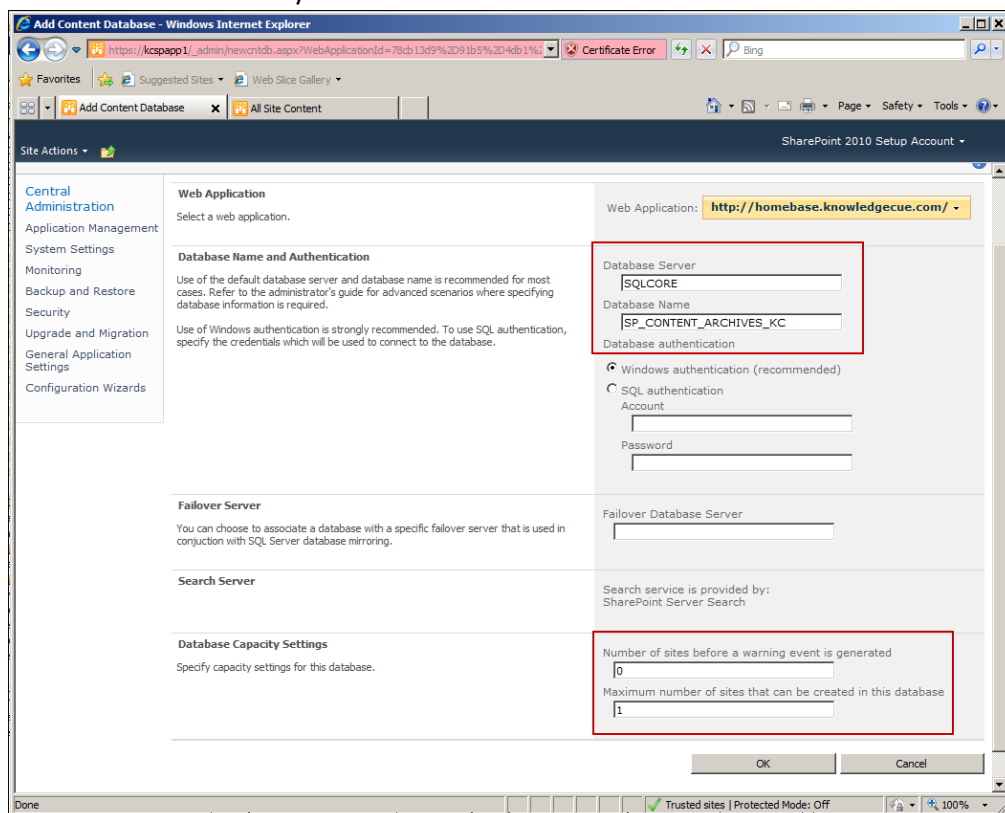
3. Create site collection

Now in order to test our scenario we need to create a new site collection in the new content database. Since you created this database outside of SharePoint you need to go to Central Administration and add this database to the web application first. Remember in our scenario we have a web application with three site collections including the root site. We are configuring RBS for the third site collection which will use the database we created (SP_CONTENT_ARCHIVES_KC) in the above step.

1. Go to Central Administration and select Manage Content Databases
2. Ensure you have selected the appropriate web application. In this case it's http://homebase
3. Click "Add a content database" link.
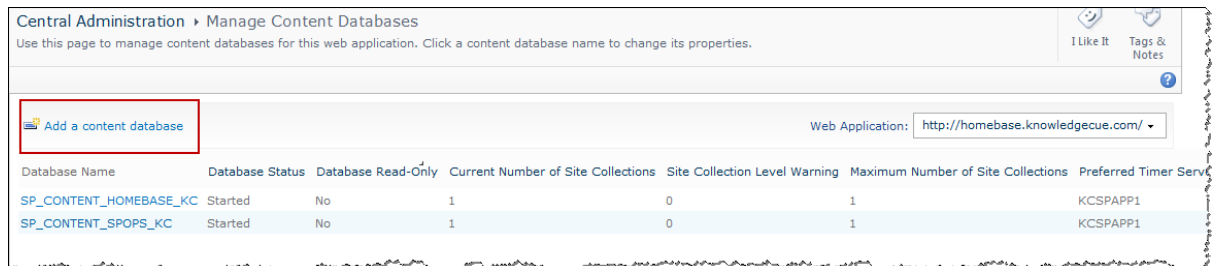
4. Add the database name and SQL server information. In this scenario I am restricting this content database to only contain 1 site collection.


5. Once added you can now create a site collection (Note that since the other two databases have been locked to contain only one site collection each when you create the new site collection it will go into the SP_CONTENT_ARCHIVES_KC database)
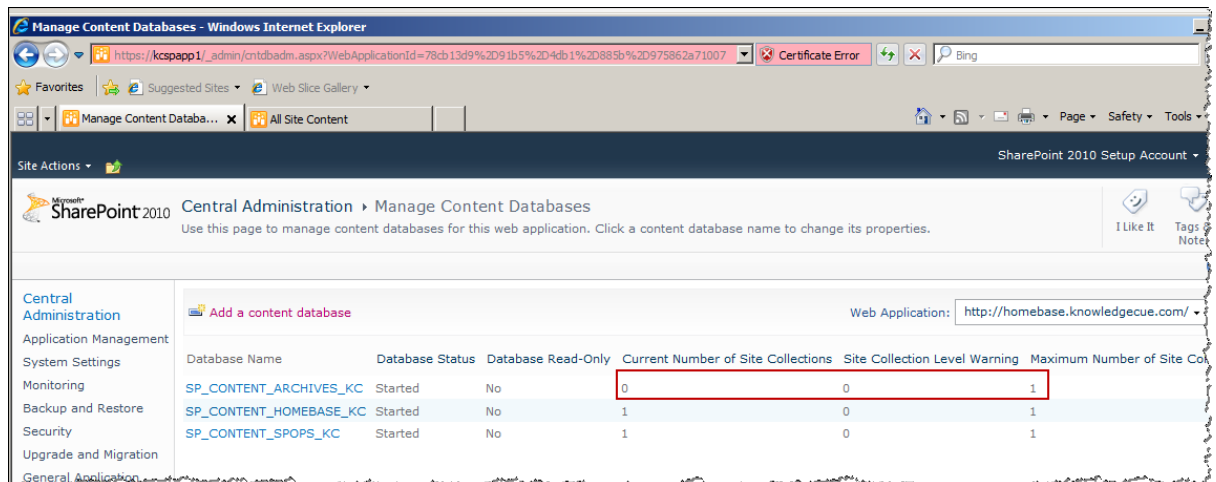
6. Open a SharePoint PowerShell command window and execute the following PowerShell command to create the site collection.

```
New-SPSite http://homebase.knowledgecue.com/sites/archives -name "RBS
Demo Site" -description "RBS Demo Site" -owneralias
"KNOWLEDGECUE\svcSP14Setup" -template "STS#0" -ContentDatabase
"SP_CONTENT_ARCHIVES_KC"
```
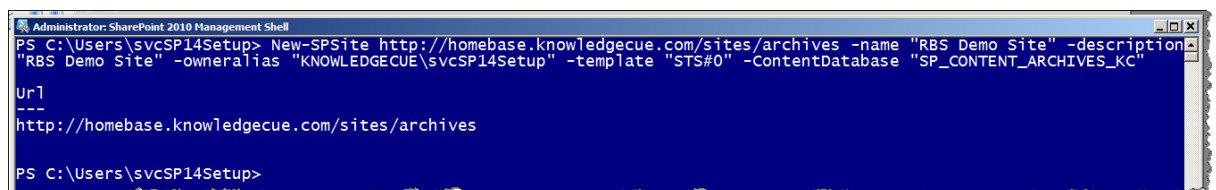

7. Navigate to the site collection to verify access or check via Central Administration
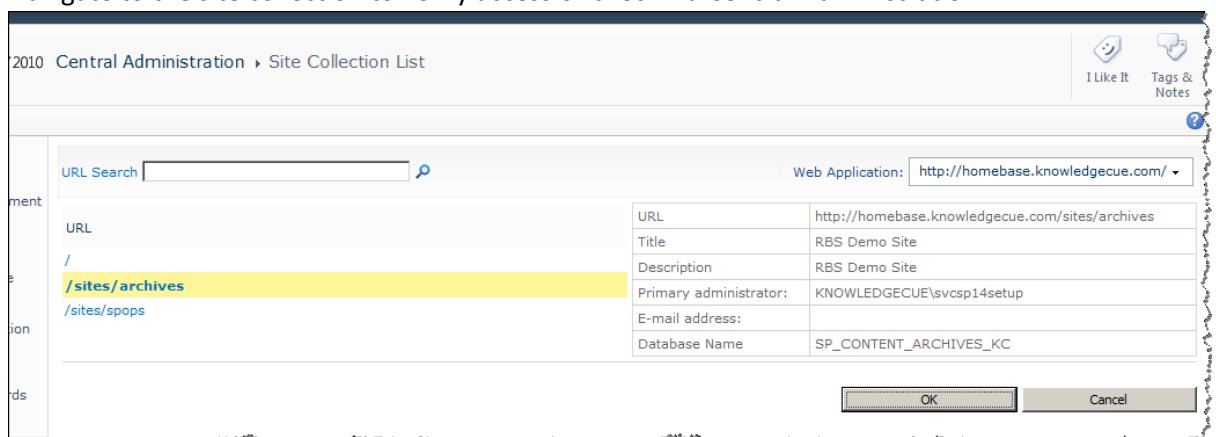
4. Configure the content database to use RBS with FILESTREAM

Enabling RBS must be carried out per content database being used. Verify that the user account that you use to perform this step is a member of the Administrators group on the SharePoint web server, and is a member of the SQL Server dbcreator and securityadmin fixed server roles on the computer that is running Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2. In our example this is the SharePoint setup account (knowledgecue\svcsp14setup).

The following commands must be executed on SQL server in the following order.

1. Open SQL Server Management Studio and Open a Query Window
2. Execute the following command in the order of: First command

```
USE [SP_CONTENT_ARCHIVES_KC]

If not exists (select * from sys.symmetric_keys where name =
N'##MS_DatabaseMasterKey##')create master key encryption by password
= N'Admin Key Password !2#4'
```

3. Second command

```
USE [SP_CONTENT_ARCHIVES_KC]

If not exists (select groupname from sysfilegroups where
groupname=N'RBSFilestreamProvider')alter database
[SP_CONTENT_ARCHIVES_KC] add filegroup RBSFilestreamProvider contains
filestream
```

4. Third command

```
USE [SP_CONTENT_ARCHIVES_KC]

Alter database [SP_CONTENT_ARCHIVES_KC] add file (name =
RBSFilestreamFile, filename = 'E:\RBSDataStore') to filegroup
RBSFilestreamProvider
```

5. Check the location specified if the E:\RBSDataStore directory has been created. Do not attempt to create this directory manually if this step does not work.
   Note, that you can provision a RBS store for each database only one time. If you attempt to provision the same RBS data store multiple times, it will not work.
   In a real world scenario you can create multiple locations for each content database that you want RBS enabled such as E:\RBSDataStore2 etc. See section 7 for enabling an existing database.
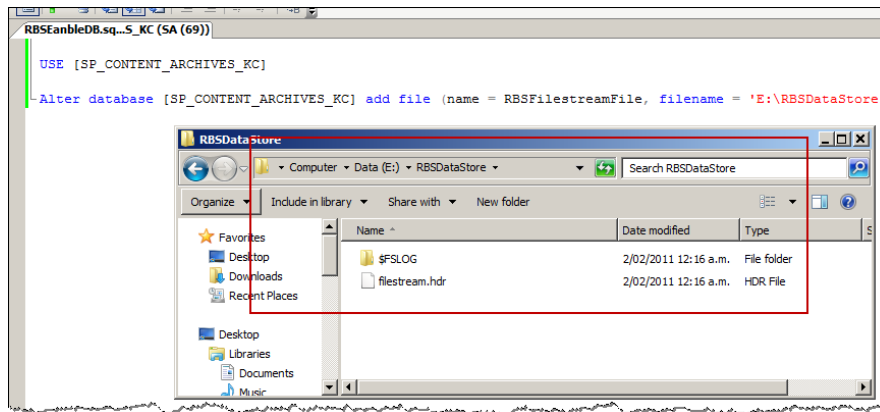
## 5. Install the RBS provider on SQL and SharePoint Servers

Make sure the correct RBS.msi has been downloaded from
http://go.microsoft.com/fwlink/?LinkID=177388.

1. Run the installation on the SQL server first.
2. Copy the downloaded RBS.msi to ex: C:\SPSetupInfo\.
3. Open a command prompt as an administrator and execute the following command within
   C:\SPSetupInfo\.

```
msiexec /qn /lvx* rbs_install_log.txt /i RBS.msi
TRUSTSERVERCERTIFICATE=true FILEGROUP=PRIMARY
DBNAME="SP_CONTENT_ARCHIVES_KC" DBINSTANCE="SQLCORE"
FILESTREAMFILEGROUP=RBSFilestreamProvider
FILESTREAMSTORENAME=FilestreamProvider_1
```

4. *Keep an eye on taskmgr for msiexec which will start the install. Until it's finished don't
   attempt to do anything as you need to wait for all the configurations to happen in the
   background. Good time to get a coffee.
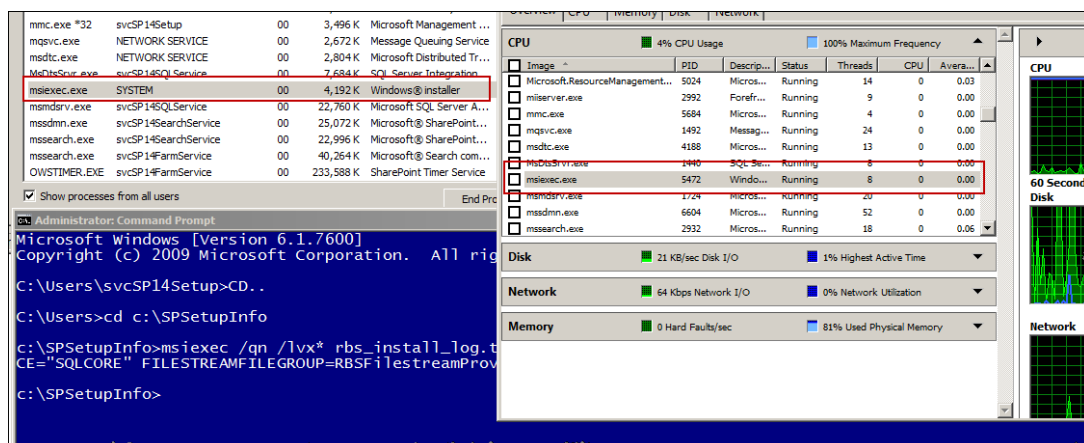
Eventually this will show as 'Terminated' in process explorer.
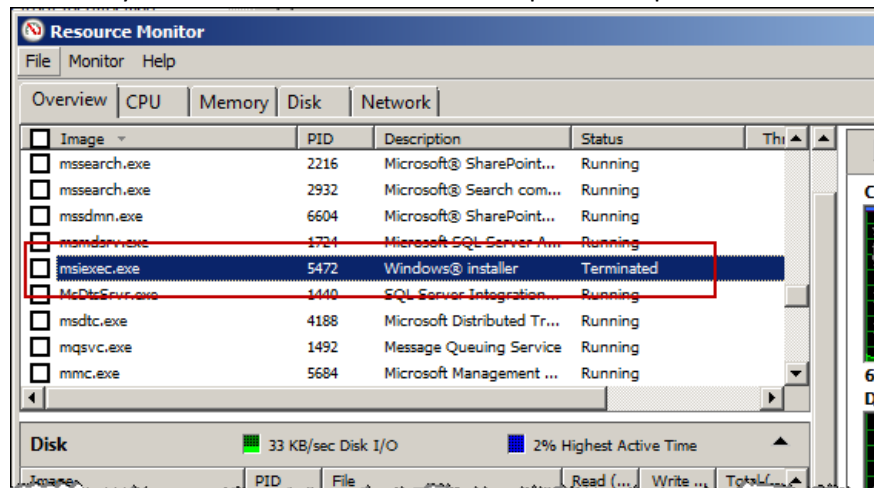
5. To verify the installation check the 'rbs_install_log.txt' files from C:\SPSetupInfo. Towards the end of the file the following message should be present.

```
MSI (s) (60:E8) [00:33:58:652]: Product: SQL Server 2008 R2 Remote
Blob Store -- Installation completed successfully.
MSI (s) (60:E8) [00:33:58:653]: Windows Installer installed the
product. Product Name: SQL Server 2008 R2 Remote Blob Store. Product
Version: 10.50.1600.1. Product Language: 1033. Manufacturer:
Microsoft Corporation. Installation success or error status: 0.
```

6. Now you need to run the following command on every SharePoint server joined to the farm. Meaning that in a multi-server deployment every SharePoint server needs to have the RBS configuration installed. Note that this command is slightly different from above.

```
msiexec /qn /lvx* rbs_install_log.txt /i RBS.msi
DBNAME="SP_CONTENT_ARCHIVES_KC" DBINSTANCE="SQLCORE"
ADDLOCAL="Client,Docs,Maintainer,ServerScript,FilestreamClient,Filest
reamServer"
```

7. *The install will take the same amount of time on each server so please be patient. Check that the 'msiexec' process has finished before proceeding.

8. To verify that the required configurations and table changes have been applied open SQL server Query window and run the following query.

```
USE [SP_CONTENT_ARCHIVES_KC]

select * from dbo.sysobjects
where name like 'mssqlrbs%'
```
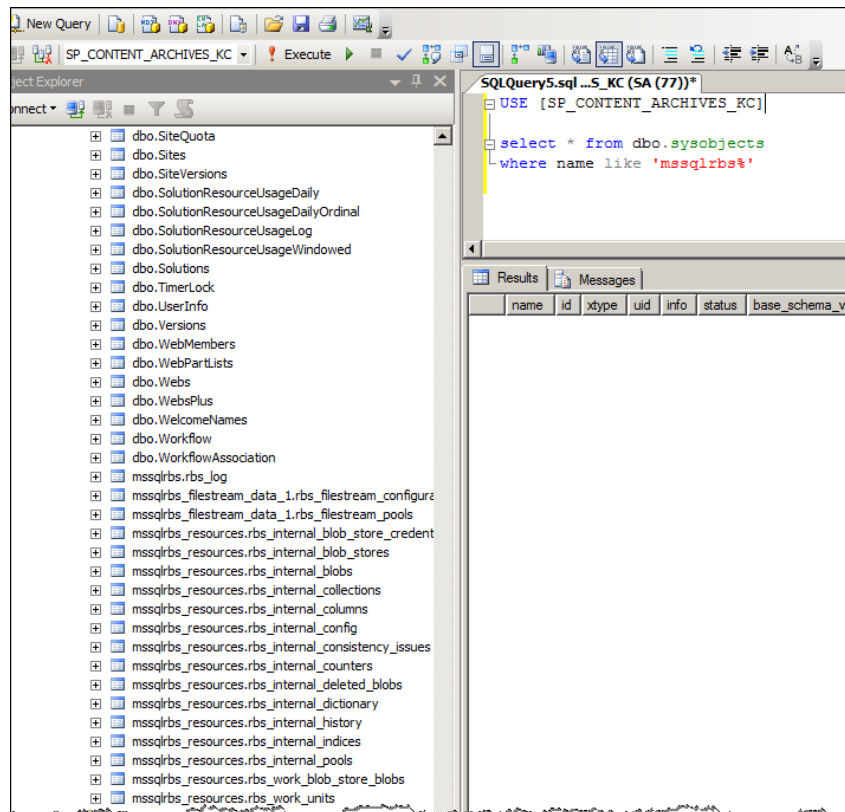
9. Navigate to the SharePoint server and open a PowerShell command and execute the following PowerShell command.

```
$cdb = Get-SPContentDatabase SP_CONTENT_ARCHIVES_KC
$rbss = $cdb.RemoteBlobStorageSettings
$rbss.Installed()
$rbss.Enable()
$rbss.SetActiveProviderName($rbss.GetProviderNames()[0])
$rbss
```
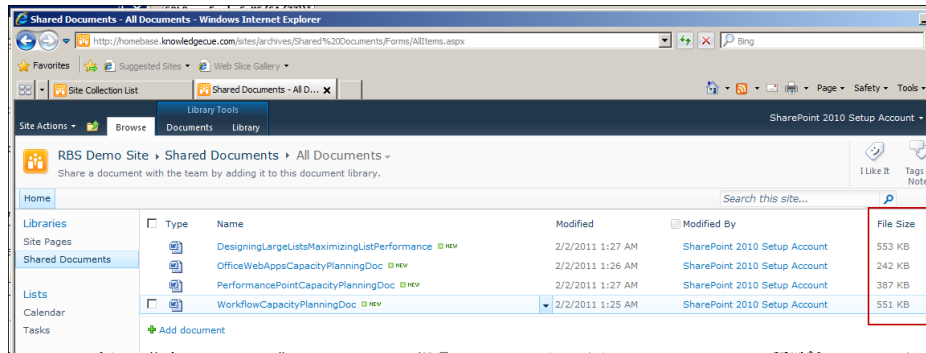
6. Verify RBS via Site Collection

1. Open the site collection http://homebase/sites/archives and navigate to the "Shared Documents" library.

2. Upload a number of documents to the document library and note down the file sizes (you can enable the file size column for the view)

3. Navigate to the E:\RBSDataStore location specified as the store. You will be able to see the files with matching file sizes located on the file store on local disk.
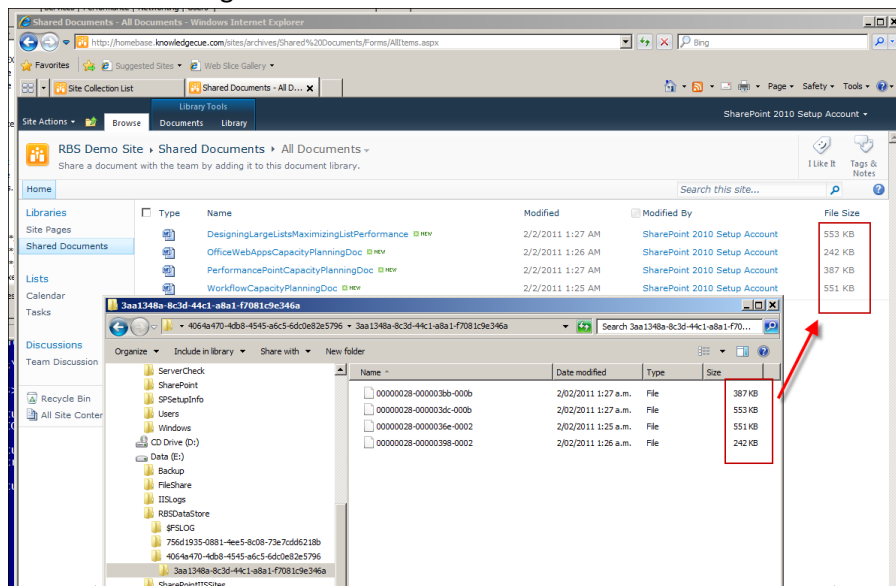
7. Moving content from an existing database to RBS

To move existing content from an existing DB you need to follow steps outlined in this section for that specific content database.

In the existing site at http://homebase has a number of documents but these are stored in SQL since this database has not being RBS enabled.

In the example we will enable RBS on 'SP_CONTENT_HOMEBASE_KC' which is one of the existing databases that houses the root site collection data. When performing this action ensure that this is done at a time where there is low user interaction or no users are using the files being moved.

Note that the commands used are slightly different in this case. Since we already enabled the FILESTREAM provider filegroup name of 'RBSFilestreamprovider ' we need to change this to 'RBSFilestreamprovider2' and the provider store name to 'FilestreamProvider_2' for this to work.

1. Commands to be run on SQL server.

```
USE [SP_CONTENT_HOMEBASE_KC]

If not exists (select * from sys.symmetric_keys where name =
N'##MS_DatabaseMasterKey##')create master key encryption by password =
N'Admin Key Password !2#4'
```

```
USE [SP_CONTENT_HOMEBASE_KC]

If not exists (select groupname from sysfilegroups where
groupname=N'RBSFilestreamProvider2')alter database [SP_CONTENT_HOMEBASE_KC]
add filegroup RBSFilestreamProvider2 contains filestream
```

```
USE [SP_CONTENT_HOMEBASE_KC]

Alter database [SP_CONTENT_HOMEBASE_KC] add file (name =
RBSFilestreamFile2, filename = 'E:\RBSDataStore2') to filegroup
RBSFilestreamProvider2
```

2. Now Install the RBS provider on SQL and SharePoint Servers by substituting the values for content database name and the database instance. In the case of the guide these are: 'SP_CONTENT_HOMEBASE_KC' and 'SQLCORE' and Filestreamstorename to 'FilestreamProvider_2'

```
#ON SQL Server
msiexec /qn /lvx* rbs_install_log2.txt /i RBS.msi
TRUSTSERVERCERTIFICATE=true FILEGROUP=PRIMARY
DBNAME="SP_CONTENT_HOMEBASE_KC" DBINSTANCE="SQLCORE"
FILESTREAMFILEGROUP=RBSFilestreamProvider2
FILESTREAMSTORENAME=FilestreamProvider_2
#On each SP Server
msiexec /qn /i rbs.msi REMOTEBLOBENABLE=1 FILESTREAMPROVIDERENABLE=1
DBNAME="SP_CONTENT_HOMEBASE_KC"
FILESTREAMSTORENAME=FilestreamProvider_2
ADDLOCAL=EnableRBS,FilestreamRunScript DBINSTANCE="SQLCORE"
```

*Note the above commands and the 'msiexec' process may take some time to finish. Refer to '**5. Install the RBS provider on SQL and SharePoint Servers**'. Once the commands have finished executing proceed to enable the site collection. *Keep an eye on taskmgr for msiexec which will start the install. Until it's finished don't attempt to do anything as you

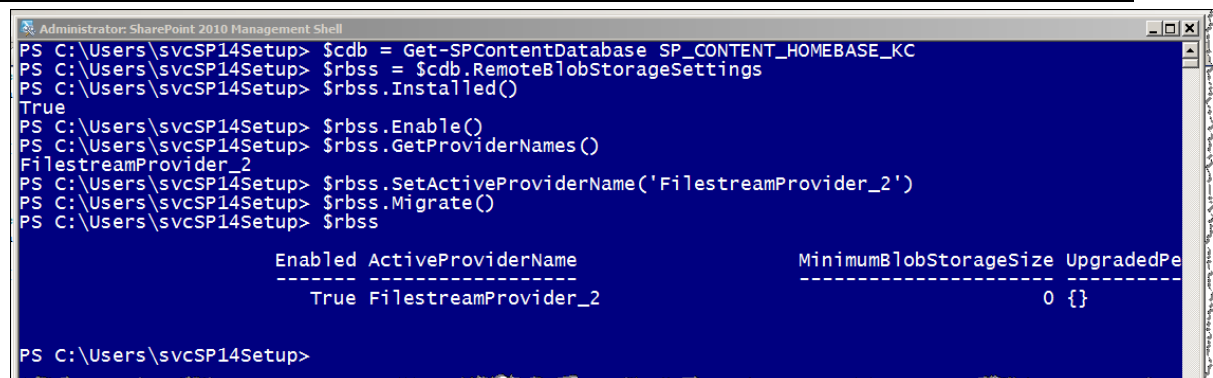need to wait for all the configurations to happen in the background. Good time to get a coffee.

3. Verify that the content database has been configured by running the following SQL query against the 'SP_CONTENT_HOMEBASE_KC'

```sql
USE [SP_CONTENT_HOMEBASE_KC]

select * from dbo.sysobjects
where name like 'mssqlrbs%'
```

4. On the application server open a SharePoint PowerShell window and execute the following command

```powershell
$cdb = Get-SPContentDatabase SP_CONTENT_HOMEBASE_KC
$rbss = $cdb.RemoteBlobStorageSettings
$rbss.Installed()
$rbss.Enable()
$rbss.GetProviderNames()
$rbss.SetActiveProviderName('FilestreamProvider_2')
$rbss.Migrate()
$rbss
```
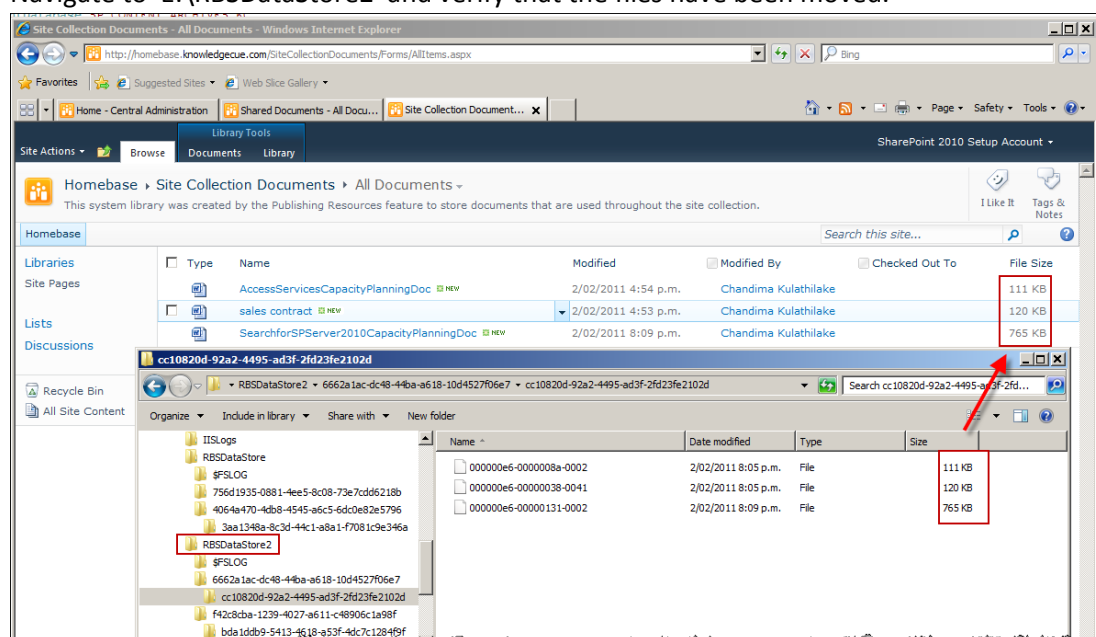

5. Navigate to 'E:\RBSDataStore2' and verify that the files have been moved.

6. The current logical configuration is now outlined below.
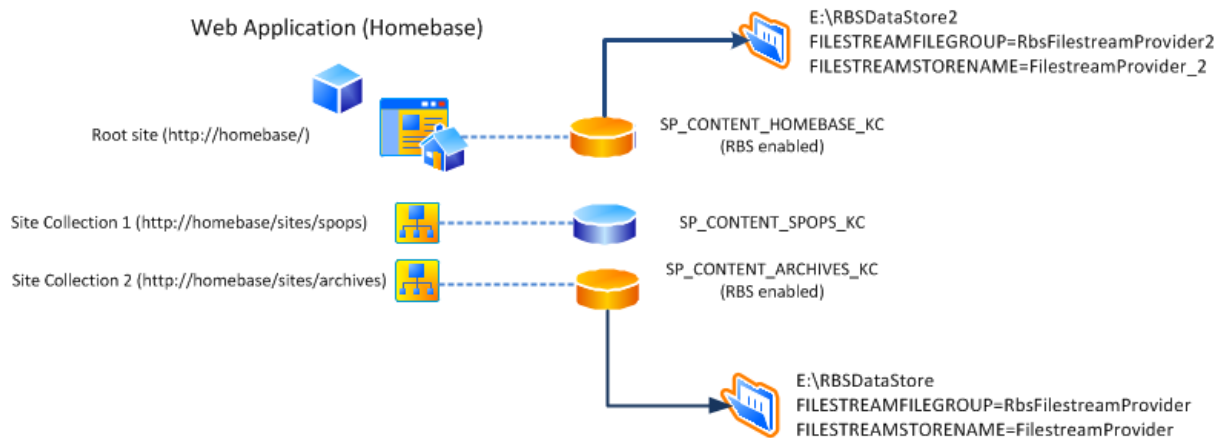
8. Disabling RBS being used for the content database

Once you have set up RBS for the database you may also need to disable RBS. This can be done using PowerShell. This can be easily disabled on a content database by setting the active provider name to the empty string. Each content database has a **RemoteBlobStorageSettings** property that can be used to invoke the **SetActiveProviderName** method. The caveats to using are that you should not remove RBS from a database already set for RBS. Microsoft does not recommend this.

1. Open a SharePoint PowerShell window on the SharePoint server
2. Execute the following command

```
#disable rbs on site collection
$site=Get-SPSite "http://homebase.knowledgecue.com"
$rbss=$site.ContentDatabase.RemoteBlobStorageSettings
$rbss.SetActiveProviderName("")
```

3. Verify that content is uploaded is not using RBS
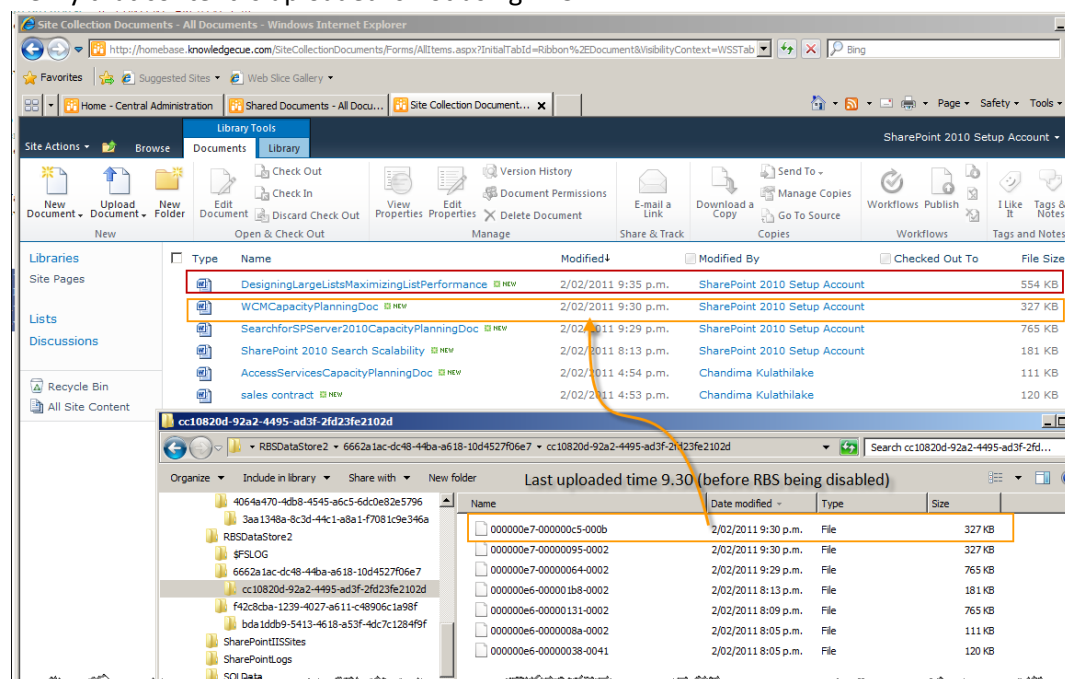
Further Information on RBS

Information about RBS can be obtained from the following links.

- Overview of RBS – TechNet - http://technet.microsoft.com/en-us/library/ee748649.aspx
- Manage RBS – TechNet - http://technet.microsoft.com/en-us/library/ee748638.aspx
- FILESTREAM overview - TechNet - http://technet.microsoft.com/en-us/library/bb933993.aspx

About Knowledge Cue

SharePoint is not the solution, it is the technology platform and capabilities that can be leveraged to realise solutions within an organisation.

Knowledge Cue is a specialist SharePoint consultancy focused on providing consultancy services to organisations about Microsoft SharePoint technologies (SharePoint).

Our main focus is in providing organisations with the most suitable and practical business-focused solutions using SharePoint for achieving business benefits and value. Organisations that have already invested in SharePoint will benefit from our experience in deploying real world SharePoint platforms and solutions.

Knowledge Cue specialises in helping organisations to first establish and manage their SharePoint platform and then deliver business solutions on that platform. Establishing a platform means covering both the infrastructure technology and the on-going governance model to ensure a secure, scalable, and robust SharePoint platform overtime. Delivering solutions on that platform means understanding the business success criteria and knowing how SharePoint can first be leveraged out of the box, next where 3rd party products can add value, then finally where custom development may be required.

Knowledge Cue can provide a complete service from architectural design to platform and solution delivery with our team of SharePoint experts. We also specialises in providing independent designs, architecture and health audits, reviews or just general support where another vendor is proving SharePoint services to an organisation.

http://www.knowledgecue.com

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About Combined Knowledge

Combined Knowledge Ltd, one of the world's Premier Microsoft SharePoint Training providers and member of the World Education Training Alliance specialises in the exclusive training on SharePoint Server and Windows SharePoint Services. We pride ourselves in being the leading training provider of these courses for Europe and the Middle East using the Mindsharp and Combined Knowledge course materials.

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