



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Configuring Libatel SharpDial with Avaya IP Office R8 to capture CDR records -Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps for provisioning Libatel's SharpDial Call Detail Recording Solution to successfully interoperate with Avaya IP Office R8 in order to capture Call Detail Recording records. The SharpDial solution, consisting of a Call Detail Recording server based on the logging of outgoing, incoming, internal and missed calls data reported by the PBX, manages captured data and generates reports. The monitoring of Call Detail Recording using SharpDial, a web-SQL based call accounting solution, gives a detailed account of all calls made and received by Avaya IP Office.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

SharpDial is a web-SQL based call accounting solution used to log outgoing, incoming, internal and missed calls data sent by the PBX, to manage captured data and generate reports. SharpDial connects to any PBX configured to send Call Detail Recording (CDR) data on a Transmission Control Protocol (TCP) port (client or server), serial connector, through ftp or web services operations. When connected to Avaya IP Office R8, a parser is needed to convert the CDR records to a format recognized by SharpDial. SharpDial components are:

1. **Monitor Service:** Responsible for starting and stopping all SharpDial services, also responsible for sending heartbeat and notification emails at configurable intervals to configured email addresses.
2. **Process0 Service:** Responsible for establishing connection with multi-site PBX and logging data in the process0 databases table.
3. **Engine Service:** Engine application, responsible for pricing all incoming, outgoing and internal calls.
4. **Parser (IPO5):** Acting as a bridge, responsible for converting CDR data from IP Office into standard format, recognizable by the SharpDial engine.
5. **License Service:** Responsible for managing solution licence.
6. **Administration and Reporting Interface:** Web based interface used for updating the software's database and generating reports.

## 2. General Test Approach and Test Results

The test environment comprises of an Avaya IP Office R8 connect to a simulated PSTN in order to generate Call Detail Recording (CDR) information for incoming and outgoing calls. The information captured consists of call information originating and terminating on Avaya 9600 Series deskphones with H.323 firmware and Avaya 2400 series digital deskphones. The information on calls made and received is presented in a reporting structure by a web interface on the SharpDial server.

### 2.1. Compliance Test Cases

This section contains a summary of test cases carried out to validate the various capabilities of the solution and to show the interoperability of the SharpDial and IP Office.

- **Connection between SharpDial Process0 Service and IP Office:** The IP Office was connected to the SharpDial Process0 Service (TCP Server) via TCP\IP Socket. Process0 log files were checked.
- **CDR captured by SharpDial Process0 Service:** Captured CDR was saved to backup files. Process0 log files and backup files were checked.
- **Captured CDR logged to Process0 database:** Captured CDR was stored in Process0 database table before being parsed and billed.
- **Incoming, outgoing, internal and missed calls tests:** Associated CDR in these call scenarios was captured in the backup files.
- **Failover and Serviceability tests:** Links between the SharpDial server and IP Office were disconnected and reconnected for observing system recovery capability from adverse conditions.

### 2.2. Test Results

All tests passed successfully.

**Note:** Compliance testing consisted of calls being made to and from IP Office using digital and H.323 deskphones.

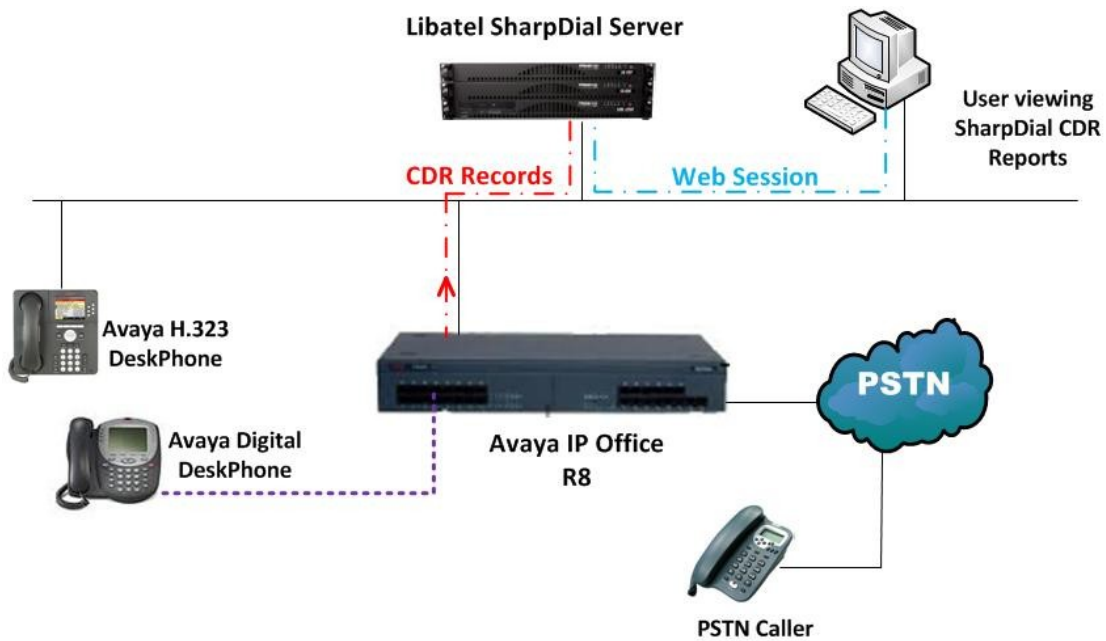
### 2.3. Support

Support from Avaya is available at <http://support.avaya.com>. Technical support from Libatel for SharpDial can be obtained as shown below.

Libatel  
Debahy Centre, Charles de Gaulle Av,  
Sin el Fil,  
Lebanon  
Tel.: +961 1 485160  
Fax: +961 1 485172  
Email: [libatel@libatel.com](mailto:libatel@libatel.com)  
Website: <http://www.libatel.com>

### 3. Reference Configuration

**Figure 1** shows the network topology during compliance testing. The SharpDial server collects CDR records from IP Office and presents the information obtained to users on the LAN via http web session.



**Figure 1: Connection of Libatel SharpDial and Avaya IP Office R8**

## 4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment Description	Software Release
Avaya IP Office 500	R8.0.16
Avaya IP Office Manager	R10.0.16
Avaya 9620 H.323 Sets	96xx H.323 Release 3.1 SP2
Avaya 2400 Deskphone	N/A
IBM x3350 Libatel Call Accounting Sever (SharpDial)	Libatel SharpDial Process0 Service V4.3.2 Libatel SharpDial Engine Service V4.2.6

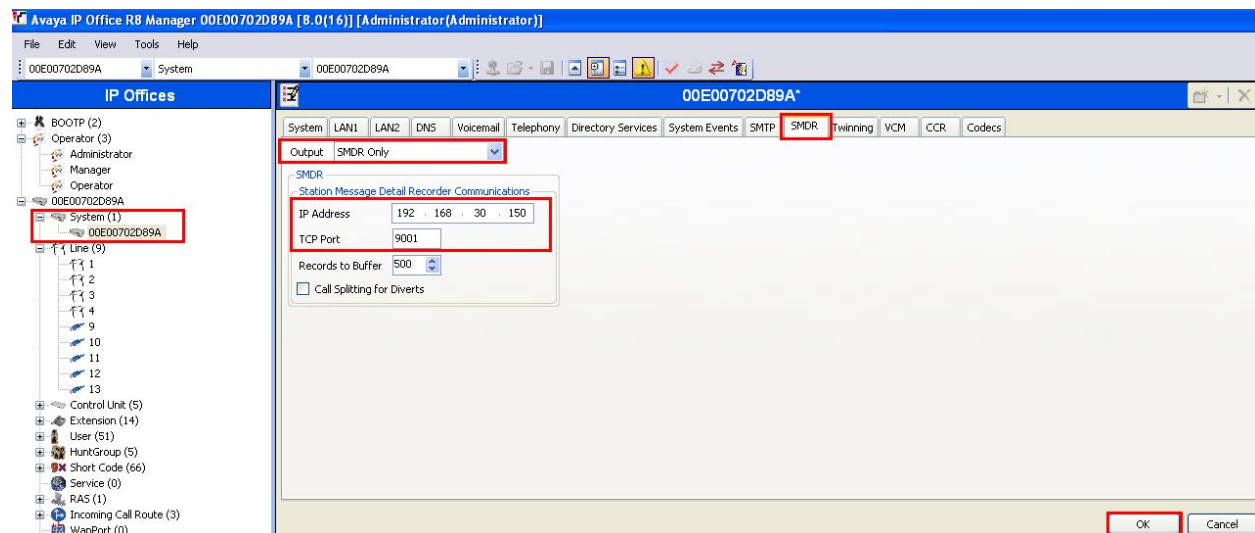
## 5. Configuration of SMDR on Avaya IP Office

IP Office is administered using IP Office Manager installed on a client PC. This section shows changes to the IP Office configuration required to interoperate with SharpDial correctly.

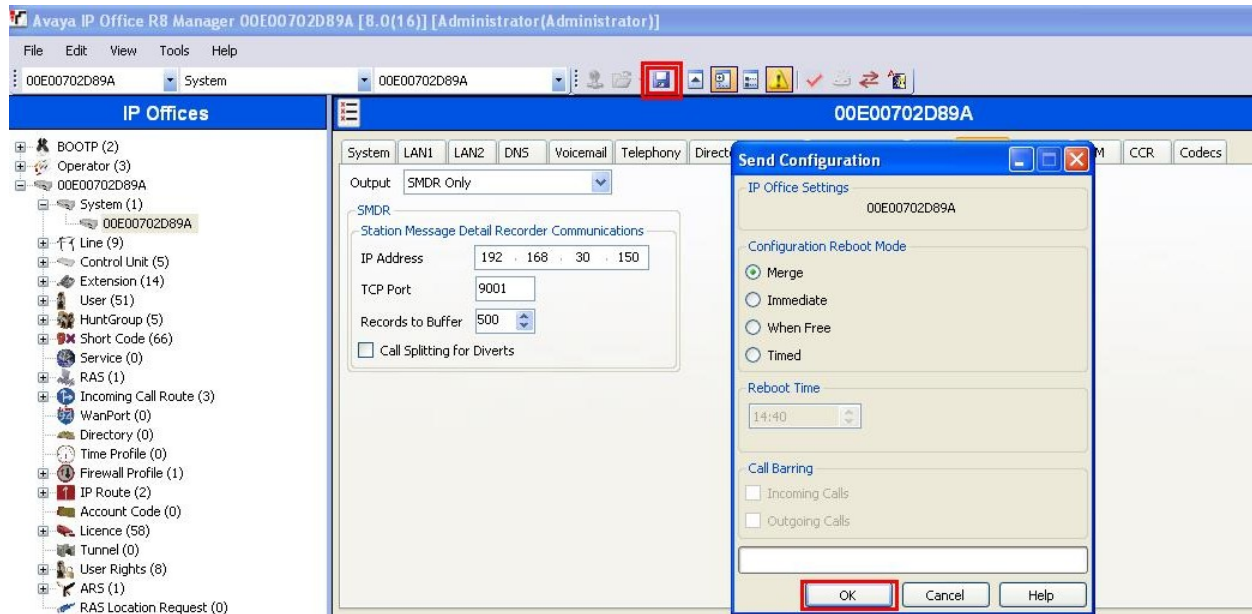
**Note:** The configuration of IP Office for call routing is outside the scope of this document. It is assumed that a full working system is already installed. Included below are the changes necessary in order to ensure CDR records be correctly produced and sent to SharpDial by IP Office. For all other provisioning information, such as administering Avaya IP Office, refer to product documentation in **Section 10** of these Application Notes.

Click on **System** on the left-hand pane. Under the SMDR tab ensure that **Output** is set to **SMDR Only** and fill in the **IP Address** and **TCP Port** as shown below.

- **IP Address** IP Address of the SharpDial server
- **TCP Port** Unused port number to be used by both the IP office and SharpDial



The entered information is saved by clicking on the Save icon at the top of the screen which opens the **Send Configuration** window. Click **OK** as highlighted to complete the saving.



## 6. Libatel SharpDial Components Installation

The configuration of Windows 2008 Server and the installation of any prerequisite software on the SharpDial server are outside the scope of these Application Notes. The relevant information is included in **Appendix** as a reference guide should it be required.

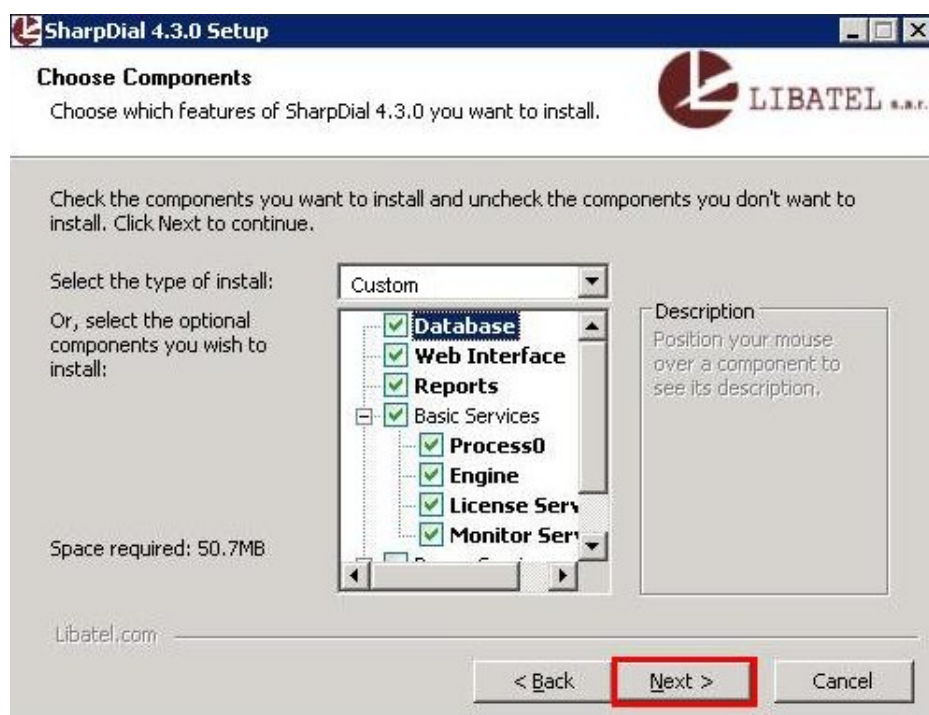
The installation of SharpDial includes connection requirements specific to IP Office as outlined in this section. To manually install the SharpDial call accounting software:

- Close all open applications
- Run the setup.exe file

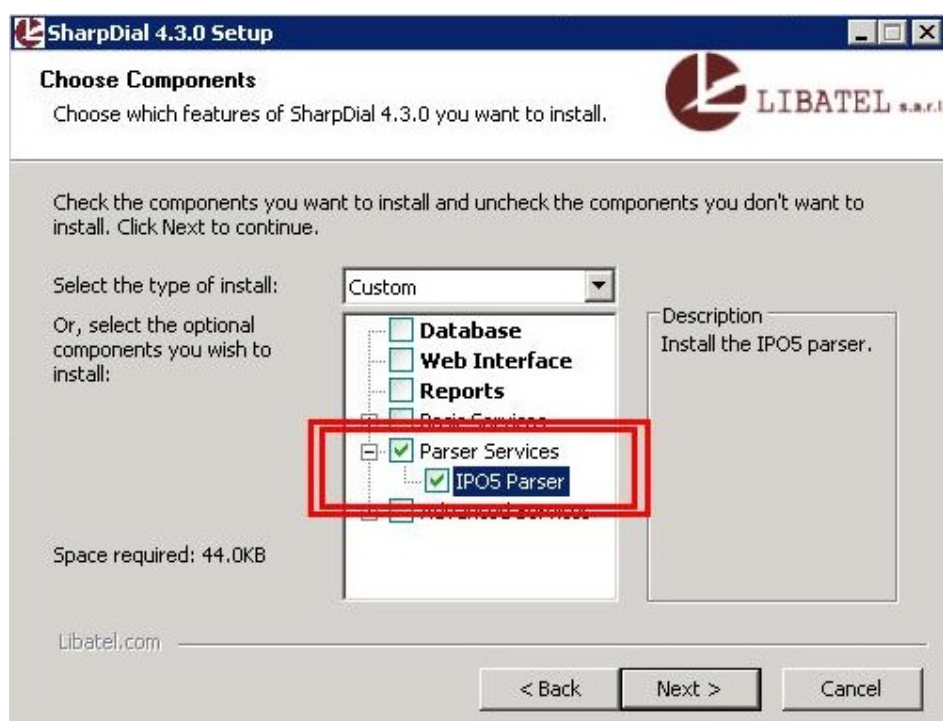
The system displays a welcome screen. Press **Next** to continue.



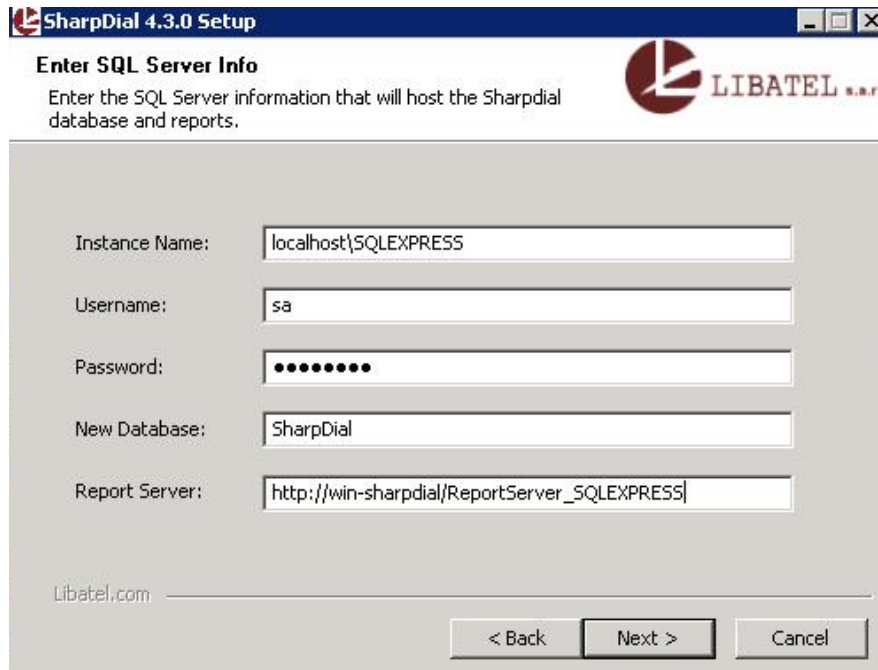
The setup displays **Choose Components** screen. Select the services as shown below and click **Next** to continue.



**Note:** During the installation select IPO5 Parser as highlighted below.



Configure the SQL **Instance Name** with the sa **Username** and **Password**, **New Database** name and **Report Server** URL.



The screenshot shows the 'Enter SQL Server Info' window of the SharpDial 4.3.0 Setup application. The window has a title bar with the application name and standard Windows window controls. Below the title bar, there is a header section with the application logo and name 'LIBATEL s.r.l.' and the title 'Enter SQL Server Info'. A subtitle reads: 'Enter the SQL Server information that will host the Sharpdial database and reports.' The main area contains five input fields: 'Instance Name' with the value 'localhost\SQLEXPRESS', 'Username' with the value 'sa', 'Password' with masked characters, 'New Database' with the value 'SharpDial', and 'Report Server' with the value 'http://win-sharpdial/ReportServer\_SQLEXPRESS'. At the bottom left is the website 'Libatel.com'. At the bottom right are three buttons: '< Back', 'Next >', and 'Cancel'.

SharpDial 4.3.0 Setup

**Enter SQL Server Info**

Enter the SQL Server information that will host the Sharpdial database and reports.

Instance Name: localhost\SQLEXPRESS

Username: sa

Password: .....

New Database: SharpDial

Report Server: http://win-sharpdial/ReportServer\_SQLEXPRESS

Libatel.com

< Back Next > Cancel

Configure the **Report server** Domain and login credentials. If no domain configuration is required, keep the default **localhost** value.



The screenshot shows the 'Enter Administrator Account' window of the SharpDial 4.3.0 Setup application. The window has a title bar with the application name and standard Windows window controls. Below the title bar, there is a header section with the application logo and name 'LIBATEL s.r.l.' and the title 'Enter Administrator Account'. A subtitle reads: 'Enter an account and password that has admin access to the report server.' The main area contains three input fields under the heading 'Report server windows account details:': 'Domain' with the value 'localhost', 'Account' with the value 'Administrator', and 'Password' with a masked character. At the bottom left is the website 'Libatel.com'. At the bottom right are three buttons: '< Back', 'Next >', and 'Cancel'.

SharpDial 4.3.0 Setup

**Enter Administrator Account**

Enter an account and password that has admin access to the report server.

Report server windows account details:

Domain: localhost

Account: Administrator

Password: •

Libatel.com

< Back Next > Cancel

Configure the **PABX** site information as described below and click **Next** to continue.

- **Site Name** Description of the PABX site's name
- **Connection Type** **TCP/IP** for IP Office
- **Frame Type** **SMDR (requires Parser)** for IP Office
- **Connection IP** IP Office IP address
- **Connection Port** Socket port number matching the configured CDR port as in **Section 5.1**

SharpDial 4.3.0 Setup

**Enter Connection Info**  
Enter the information needed to connect to the PABX.

Site Name : avaya ipo

Connection Type : TCP/IP

Frame Type : SMDR (requires Parser)

\*Refer to Documentation for customized format

TCP/IP

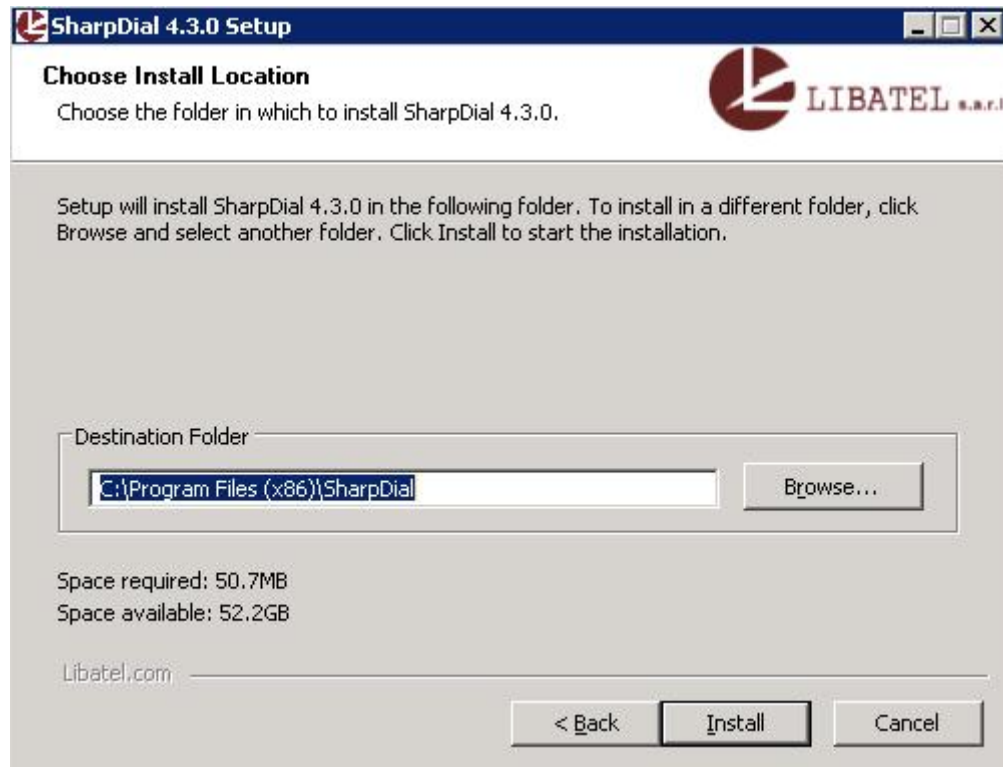
Connection IP : 192.168.30.30

Connection Port : 9001

Libatel.com

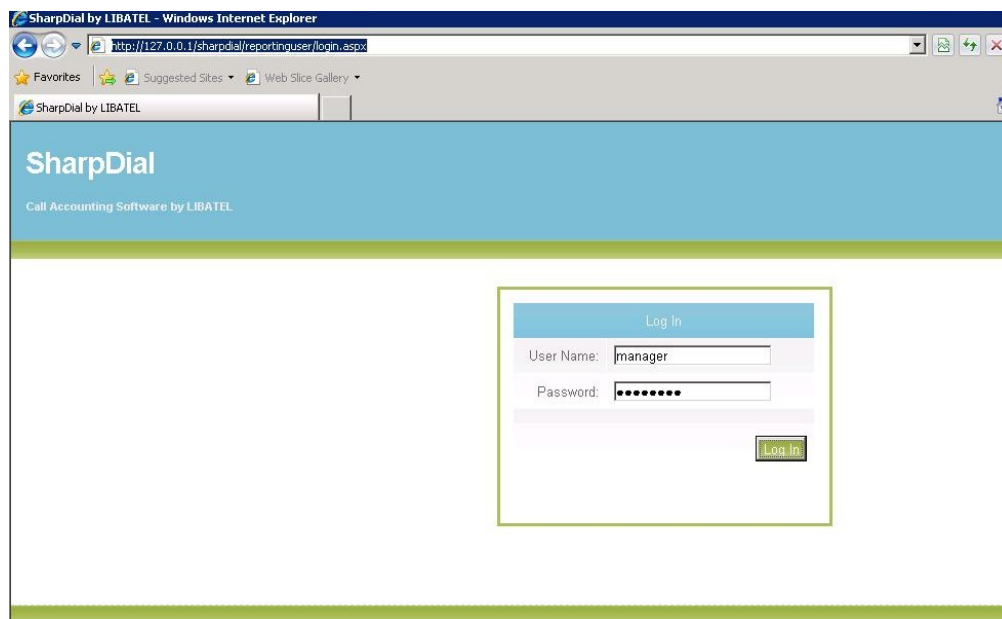
< Back Next > Cancel

Select the **Destination Folder** and click **Install** to complete the installation.

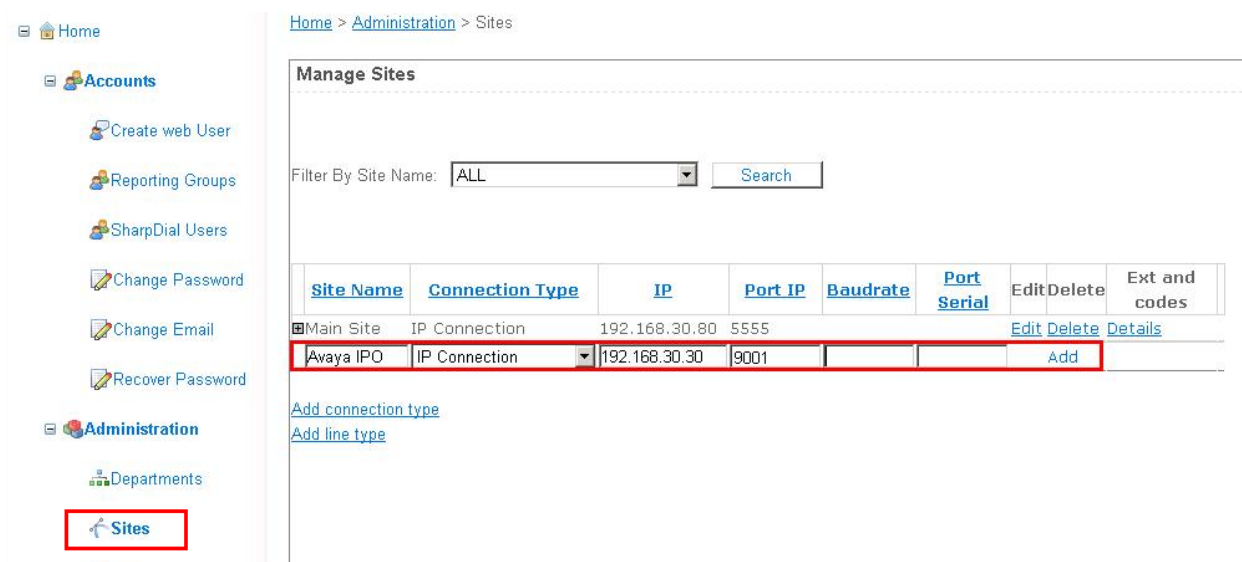


## 7. Configuring Libatel SharpDial

Open <http://<SharpDial Server IP Address>/sharpdial/reportinguser/login.aspx>. Log into the SharpDial web interface with security manager role using the default **User Name** and **Password**.



Under **Administration** on the left hand pane click on **Sites** to display all connection information on the current site. The information highlighted below was configured in **Section 6**.



Home > Administration > Sites

Manage Sites

Filter By Site Name:

Site Name	Connection Type	IP	Port IP	Baudrate	Port Serial	Edit Delete	Ext and codes
Main Site	IP Connection	192.168.30.80	5555			<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Details</a>	
Avaya IPO	IP Connection	192.168.30.30	9001			<a href="#">Add</a>	

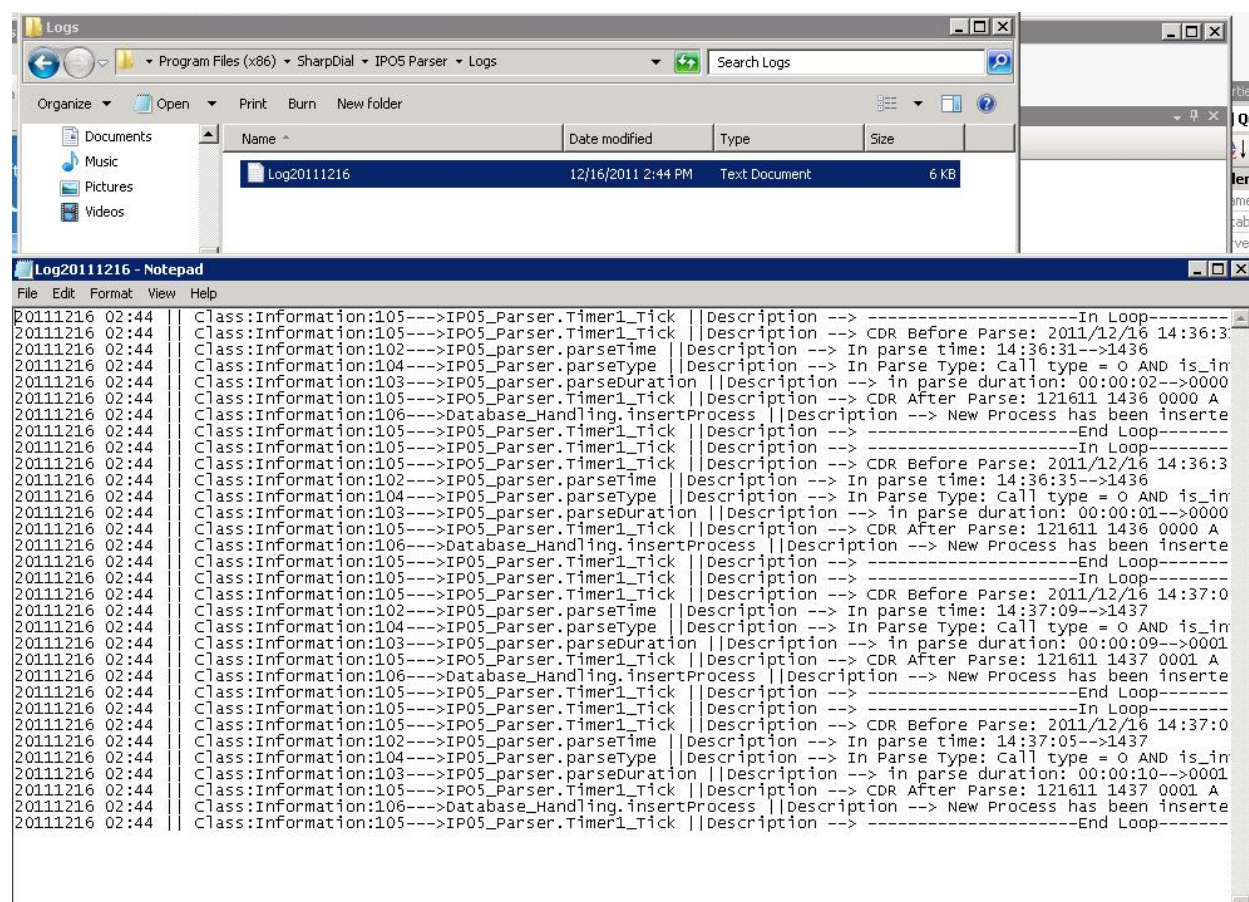
[Add connection type](#)  
[Add line type](#)

## 8. Verification Steps

The following steps can be taken to verify that IP Office is sending CDR data and that the SharpDial server is receiving this data and processing it properly.

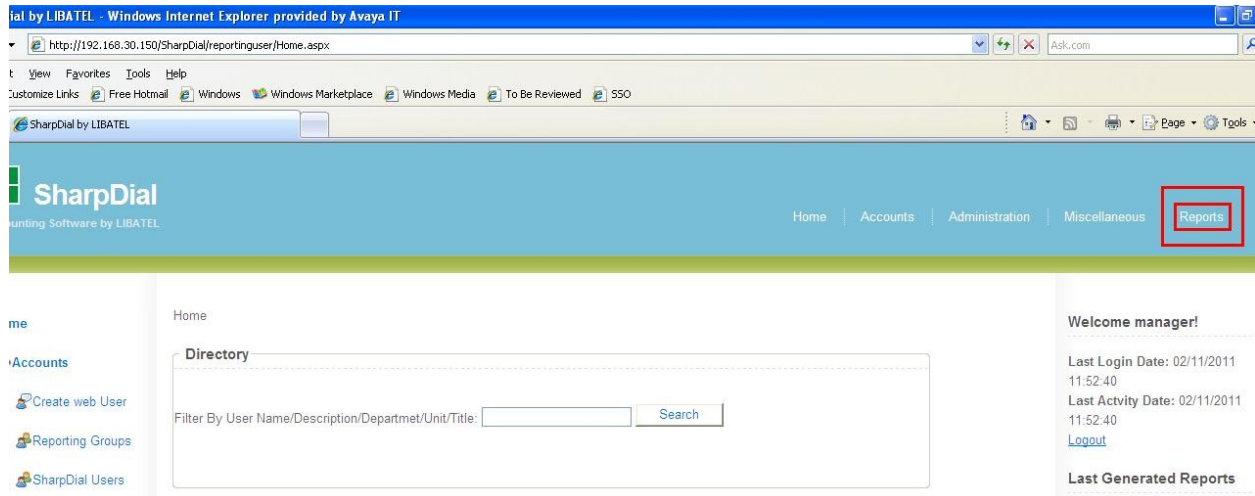
### 8.1. Verify CDR Data Received

Log onto the SharpDial server and check that raw CDR data is being correctly parsed into the CDR backup files. Open the CDR backup file located in **C:/ProgramFiles(x86)/SharpDial/IPO5 Parser/Logs**. The information on recent calls should be visible as shown below.



## 8.2. Verify Reports by ShapDial

Use the reporting tool on the Web Interface to create a CDR report by logging onto <http://<sharpdial Server IP>/sharpdial/reportinguser/login.aspx> and click on **Reports** at top right of page as shown below.



There are a number of reports that can be run. In the example below **extension\_all** is chosen as highlighted. Click **Next** to continue.



Select the start date and end date of the report to run and click **Next** (not shown). If there are multiple sites select which sites are to be reported on and click **Next** (not shown).

In this example there is only one site called **Main Site** and a list of **Extensions** available are displayed in the left-hand pane. Each extension that is to be reported on is added into the right-hand **Selected Extensions** pane as shown in the example below for extensions **3000** and **3001**. Click **Next** to continue.

[Home](#) > Reports

My Reports

Generate Reports

Extensions:

2000-Main Site  
2002-Main Site  
2010-Main Site  
2012-Main Site  
5000-Main Site  
5001-Main Site  
N/A-Main Site

Selected Extensions:

3000-Main Site  
3001-Main Site

>>>  
>  
<  
<<<

Previous Next Cancel

See the displayed example of an **Extension\_All\_Report** below:

2 of 2
Find | Next

Date: 02/11/2011 12:06:27

### Extension All Report

From : 20/09/2011

To : 20/09/2011

Extension : 3001

Date	Time	Duration	Code	Contact	Region	Price(euro)
20/09/2011	15:38	0:00:06		3000		0.0
20/09/2011	15:47	0:00:00		3000		0.0
20/09/2011	15:51	0:00:12		5001		0.0
20/09/2011	15:52	0:00:18		3000		0.0
20/09/2011	16:25	0:00:06		3000		0.0
20/09/2011	16:28	0:00:24		3000		0.0
Total for extension : 3001		0:01:06				0.0
Total for Site : Main Site		0:03:42				0.0
Grand Total:		0:03:42				0.0

2 / 2

## 9. Conclusion

As illustrated in these Application Notes, Libatel's SharpDial can be configured to successfully interoperate with Avaya IP Office R8. All call types generated a CDR record and was reported on correctly by the SharpDial Server. Please refer to **Section 2.2** for test results.

## 10. Additional References

This section references documentation relevant to these Application Notes.

The Avaya product documentation is available at <http://support.avaya.com> where the following documents can be obtained.

[1] *IP Office R8 Doc library*

All information on the product installation and configuration for Libatel's SharpDial can be found at <http://www.libatel.com>.

# Appendix

Included in this Appendix is the configuration of Windows 2008 Server for SharpDial software, the installation of Microsoft SQL 2008 as a prerequisite for the SharpDial installation and a post installation check list. Note that this is included as a reference only and is not to be followed as an installation and configuration guide.

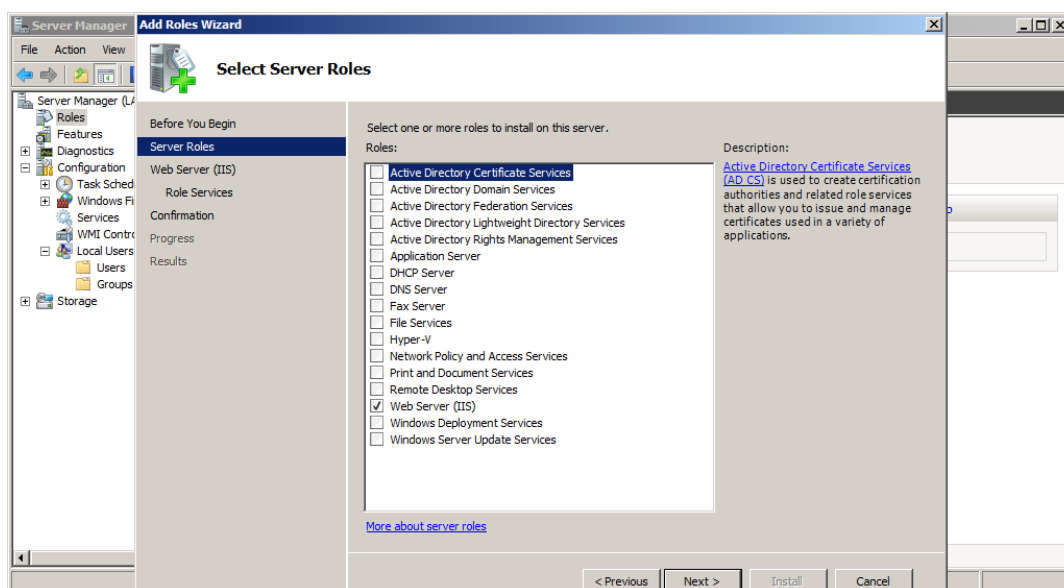
## 1. Configuration of Windows 2008 Server Before SharpDial Software Installation

The components below must be installed on the server as part of the SharpDial software's prerequisites:

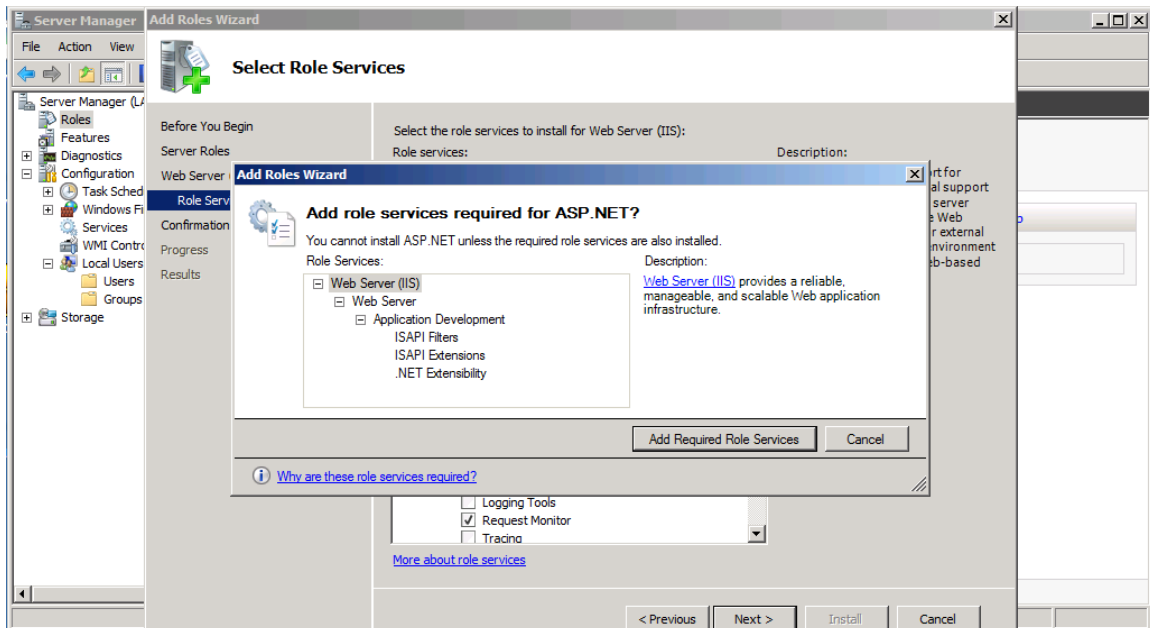
- **Windows PowerShell:** Microsoft's task automation framework, consisting of a command-line shell and associated scripting language built on top of, and integrated with the .NET Framework. PowerShell provides full access to COM and WMI, enabling administrators to perform administrative tasks on both local and remote Windows systems. (Download link: <http://support.microsoft.com/kb/968929>).
- **Windows Installer 4.5:** Microsoft Windows Installer (MSI) is the application installation and configuration service for Windows. (Download link : <http://support.microsoft.com/kb/942288>).
- **Microsoft.NET framework 3.5:** Required for the SQL installation.
- **Microsoft.NET framework 4.0:** Download link: <http://www.microsoft.com/net/download.aspx>.
- **Microsoft Internet Information Services (IIS) 5.0 or later.**

### 1.1. IIS 7 configuration

In the Control Panel, click **Programs** then click **Turn Windows features on**, click **Roles** → **Add Roles**. In the displayed Add Roles Wizard window select **Web Server (IIS)**.

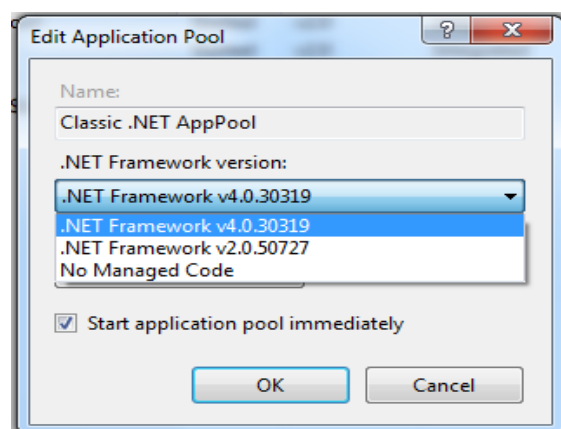


When prompted to select **Role Services**, check **ASP.NET** and add all **Required Role Services**. Continue with the wizard setup.

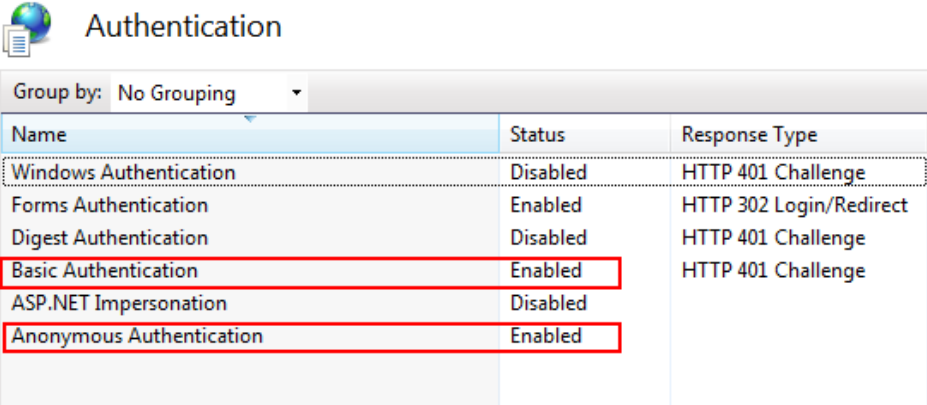


Open Internet Information Services (IIS) Manager. Run the **inetmgr** command from the **Start → Run** dialog box. Specify a .NET framework version for an application pool.

- On the **Connections** pane, expand the server node and click **Application Pools**.
- On the **Application Pools** page, select the application pool for which you want to specify a .NET Framework version, and then click **Basic Settings** in the **Actions** pane.
- In the **Edit Application Pool** dialog box, in the **.NET Framework version** list, select the version that you want the application pool to use or select **No Managed Code** if the application uses only native code.
- Click **OK**.



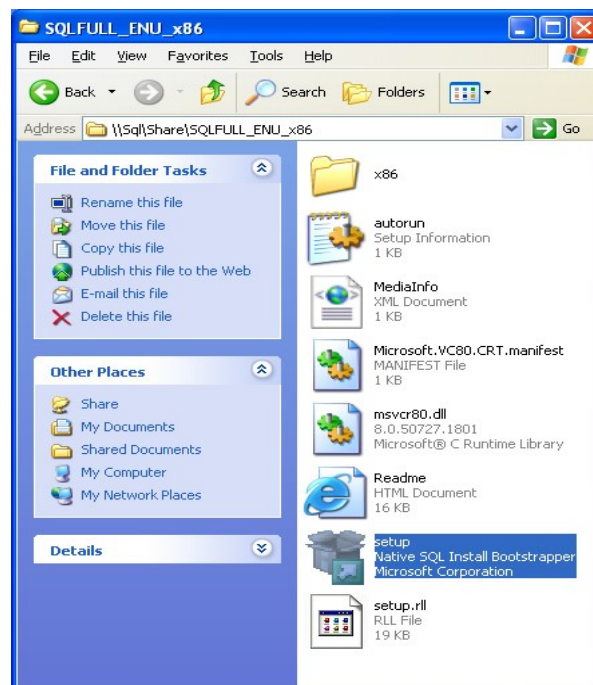
Configure site's authentication: double click the site on the left pane, double click **Authentication** and enable **Anonymous Authentication** and **Basic Authentication**.



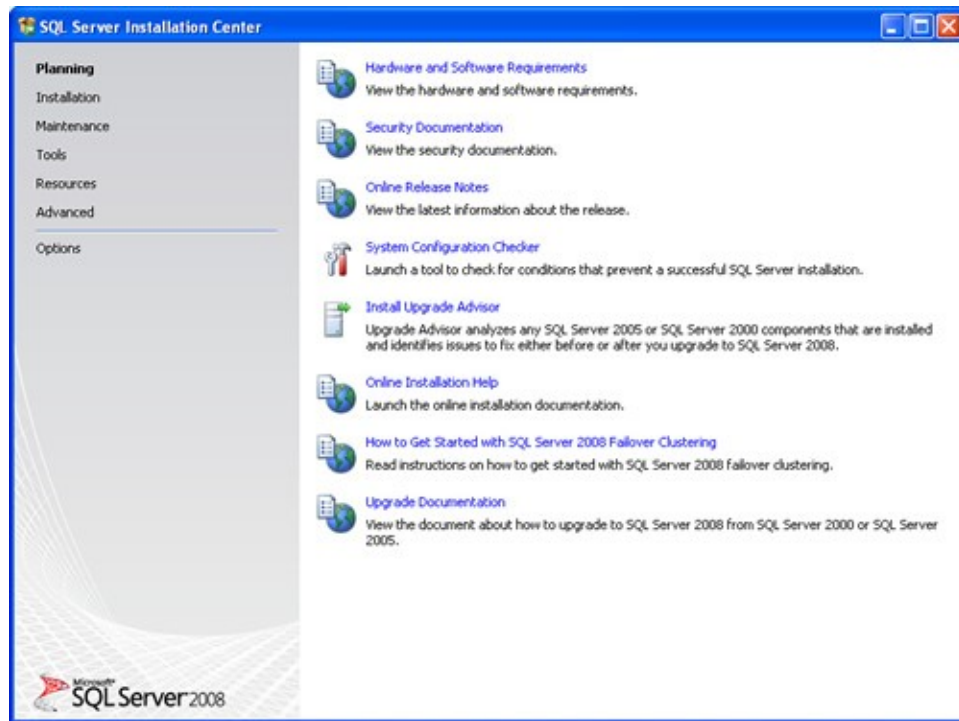
Name	Status	Response Type
Windows Authentication	Disabled	HTTP 401 Challenge
Forms Authentication	Enabled	HTTP 302 Login/Redirect
Digest Authentication	Disabled	HTTP 401 Challenge
Basic Authentication	Enabled	HTTP 401 Challenge
ASP.NET Impersonation	Disabled	
Anonymous Authentication	Enabled	

## 2. Microsoft SQL 2008 installation

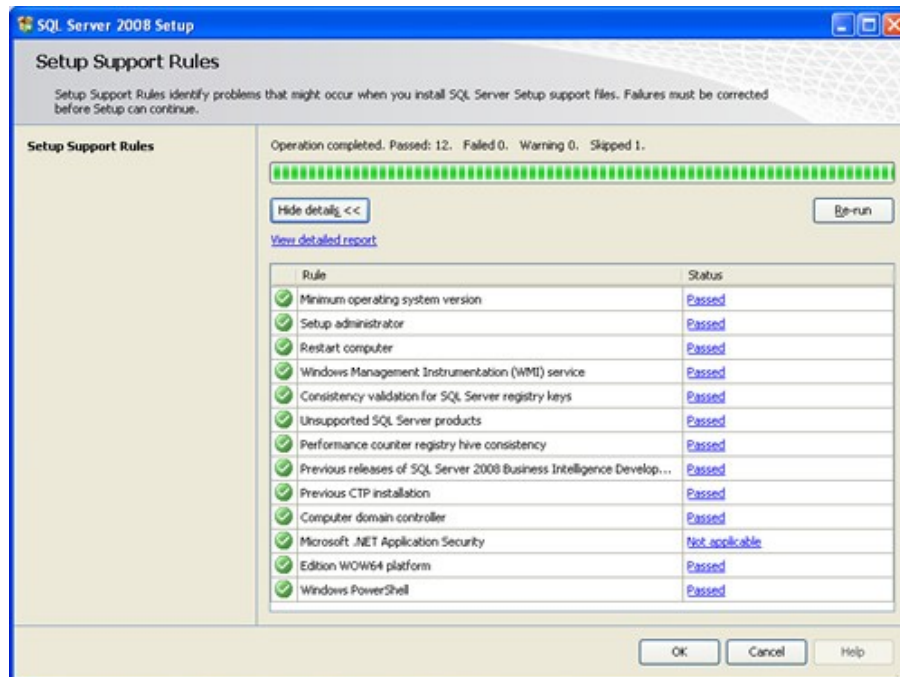
Browse to the corresponding SQL Express setup folder.



Start the installation from the SQL Server Installation Centre window.



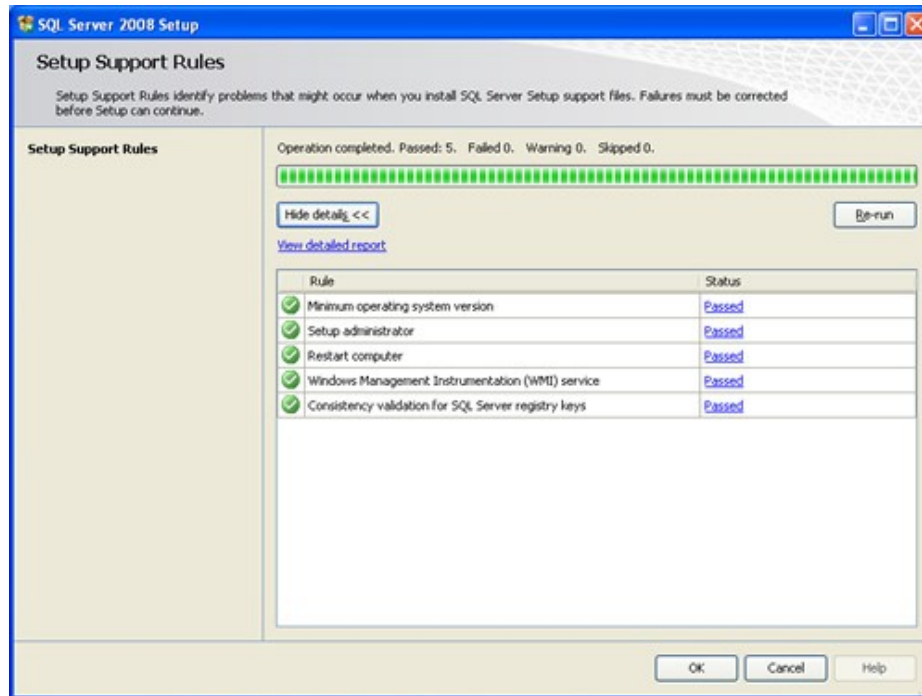
The installer runs a system check to verify that all required components are installed on the server. If failures occur (such as missing power shell), they must be corrected before proceeding with the installation.



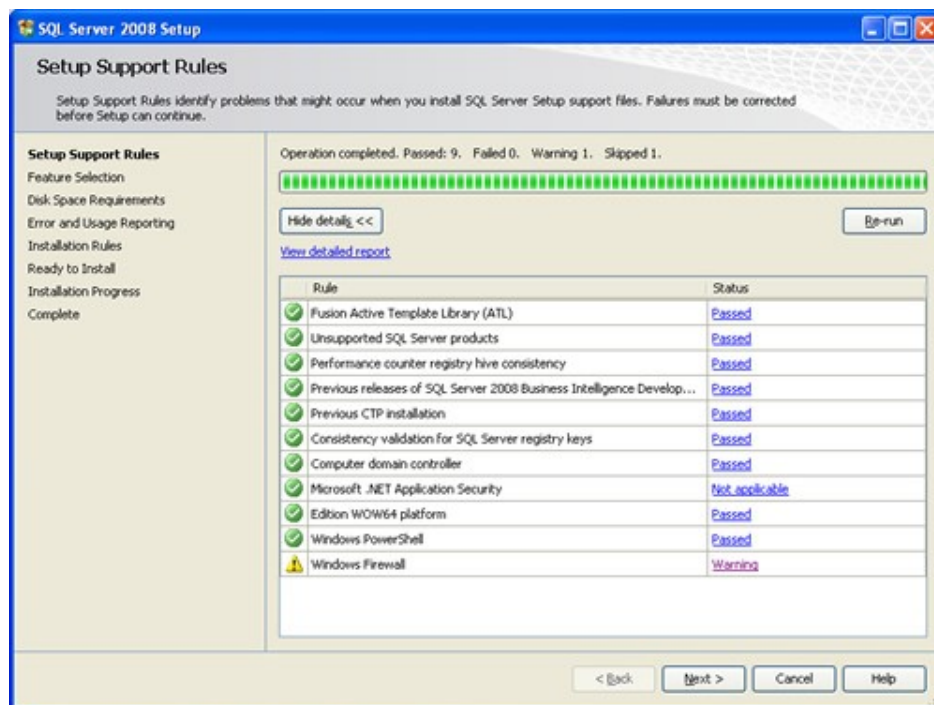
Install a new stand-alone SQL server.



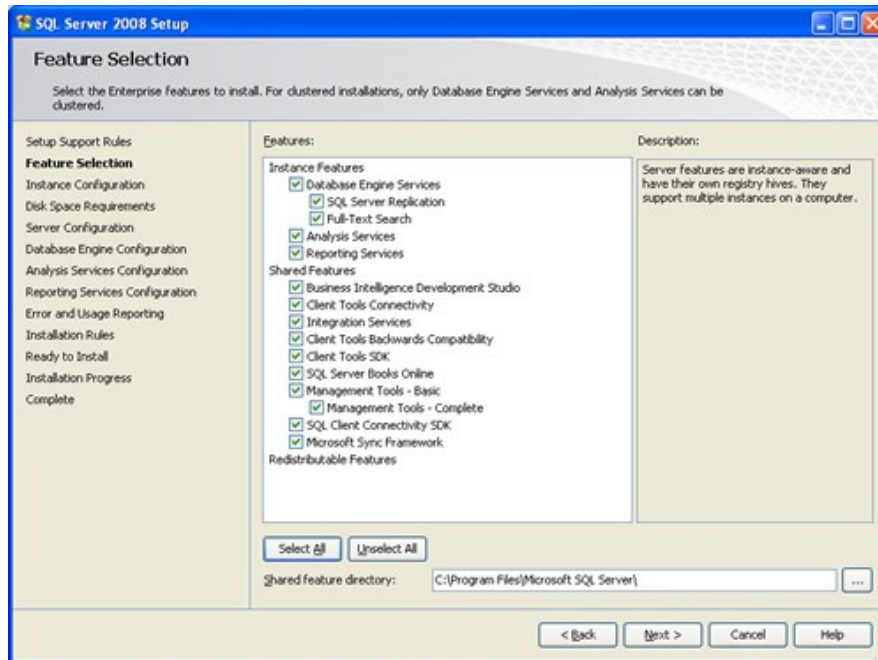
Hardware check is completed by the installer. If failures occur they must be corrected before proceeding with the installation.



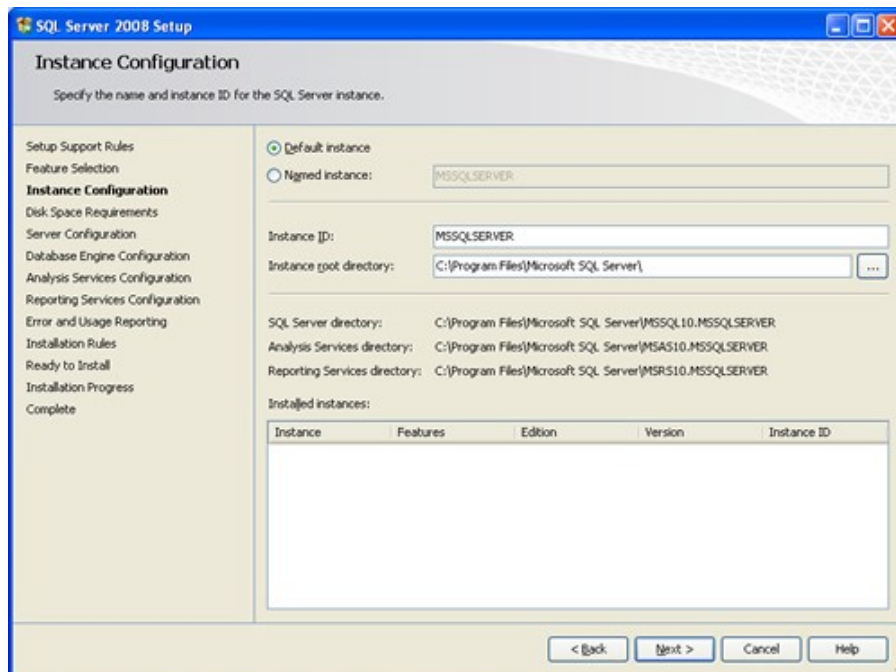
SQL Express installer checks if all prerequisites are installed. If all rules are passed, press **Next** to continue, else install required components.



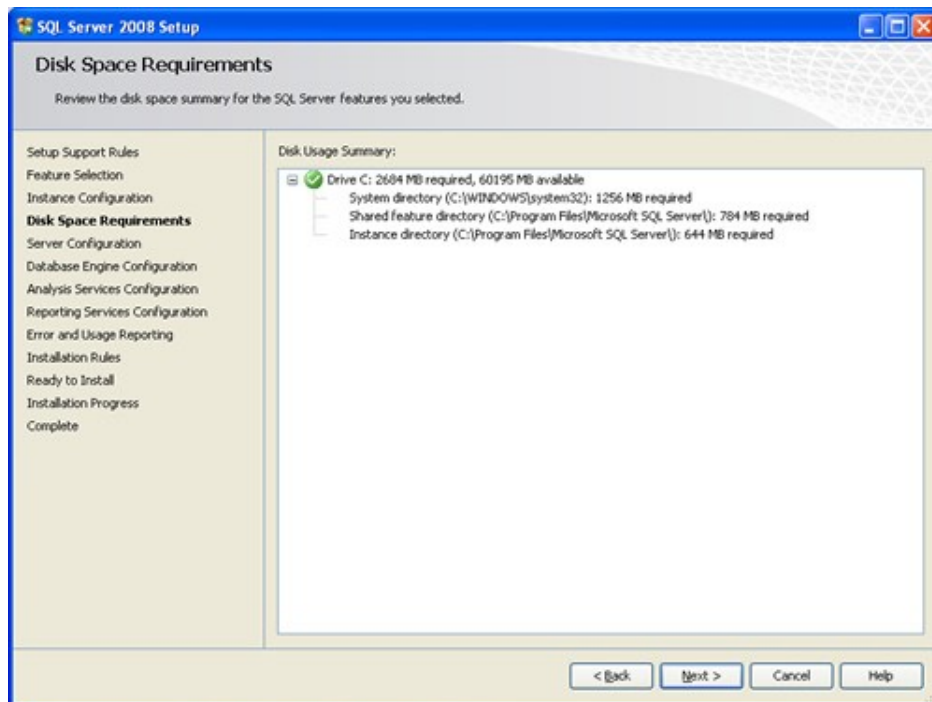
Select **SQL Feature Selection**. **Database Engine Services, Reporting Services** MUST be installed as well as **Management Tools**. Press **Next** to continue.



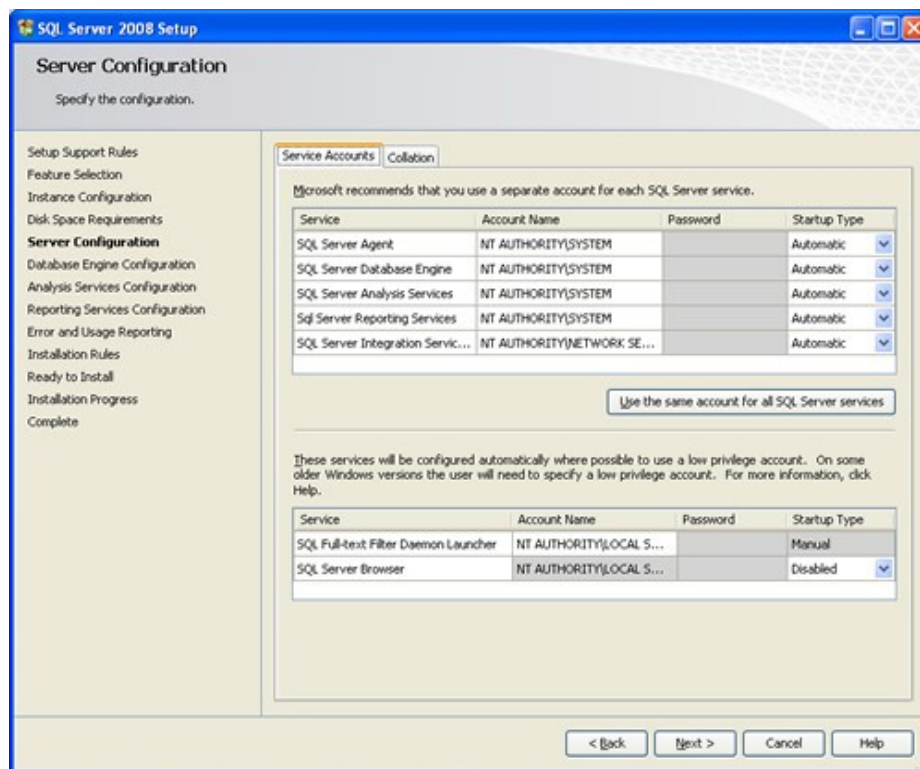
Check the **Default instance** radio button and specify the **Instance ID**. Click **Next** to continue.



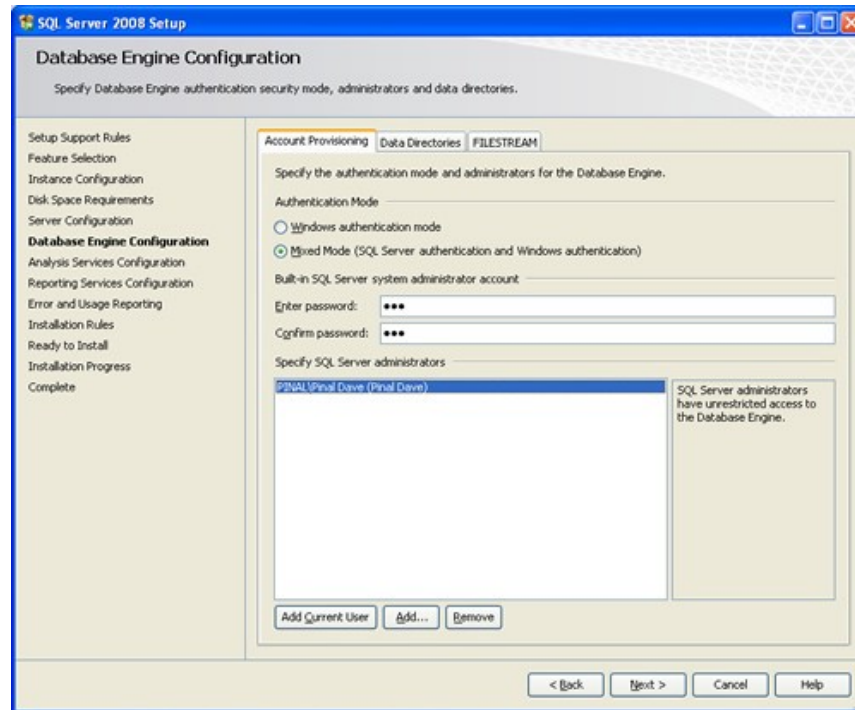
At the Disk Space Requirements page click **Next** to continue.



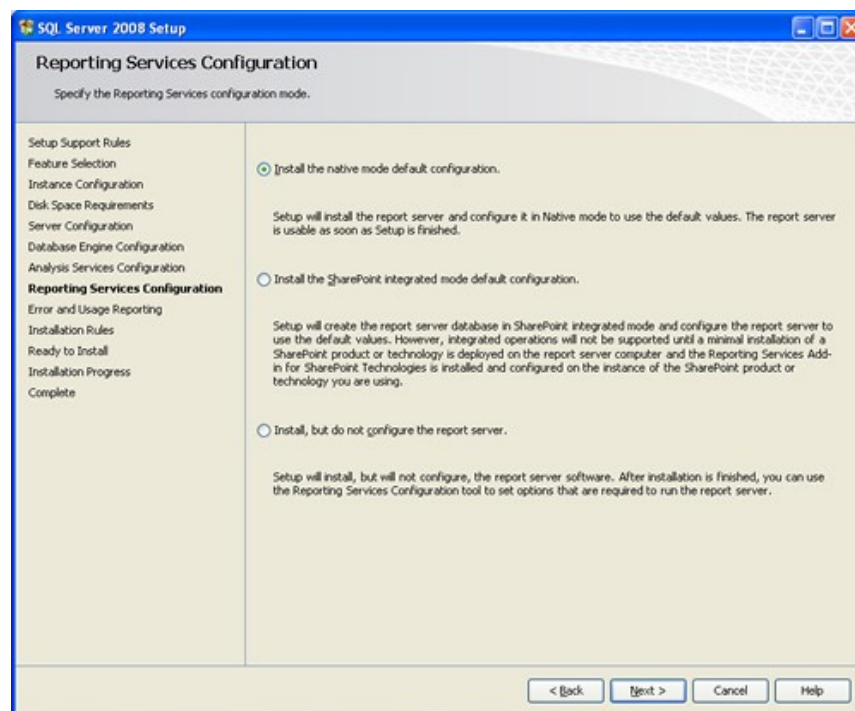
Select **NT AUTHORITY\SYSTEM** and press the **Use the same account for all SQL services** button. Click **Next** to continue.



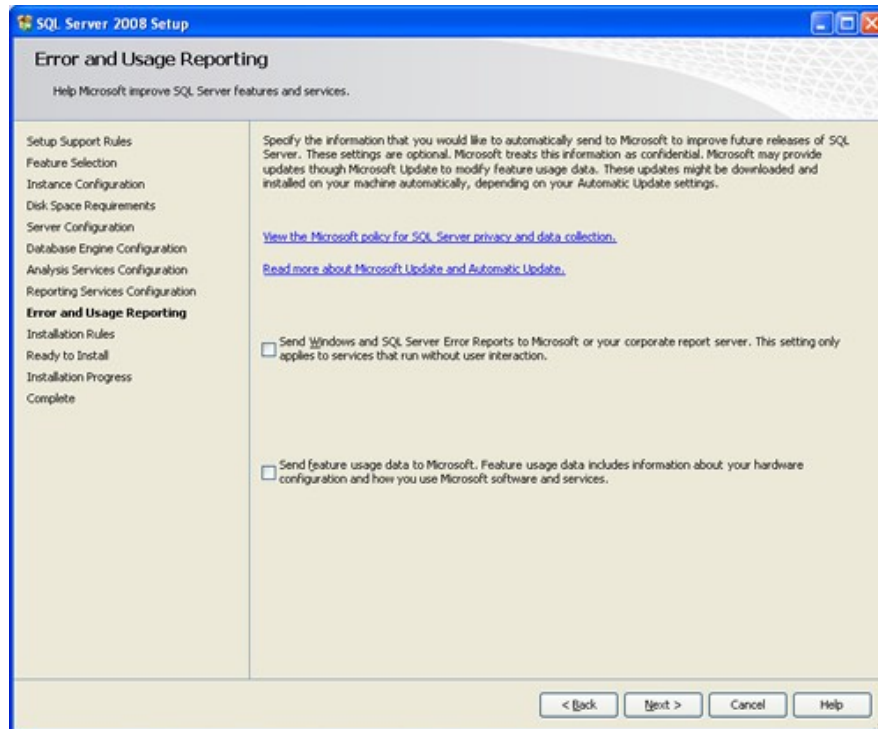
Select the **Mixed Mode** authentication and note down the entered **sa** password as it will be needed later during the component's installation.



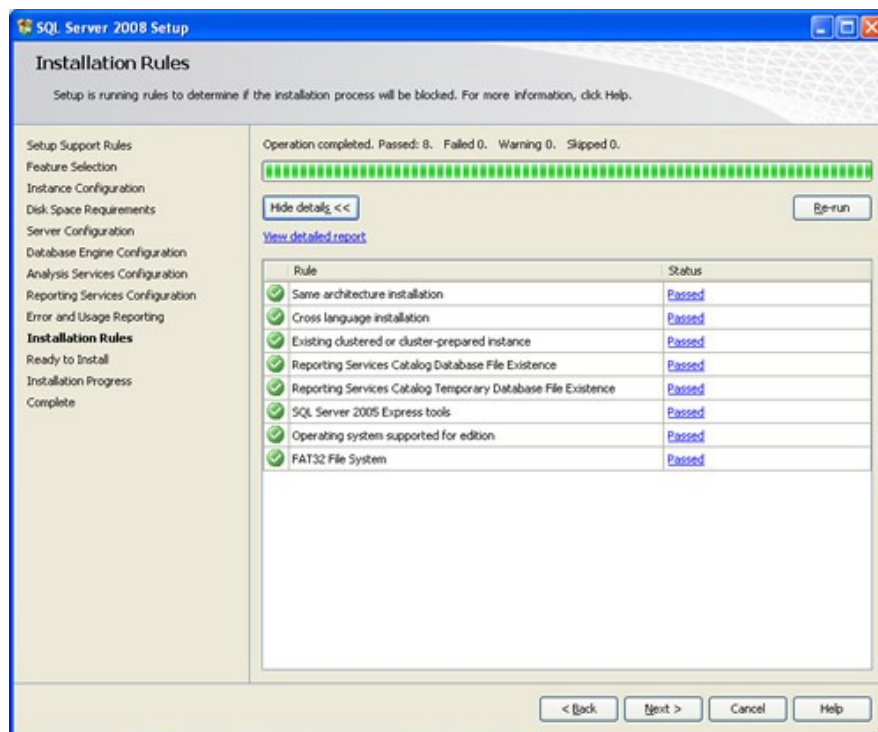
Select **Install the native mode default configuration** for **Reporting Services Configuration**.



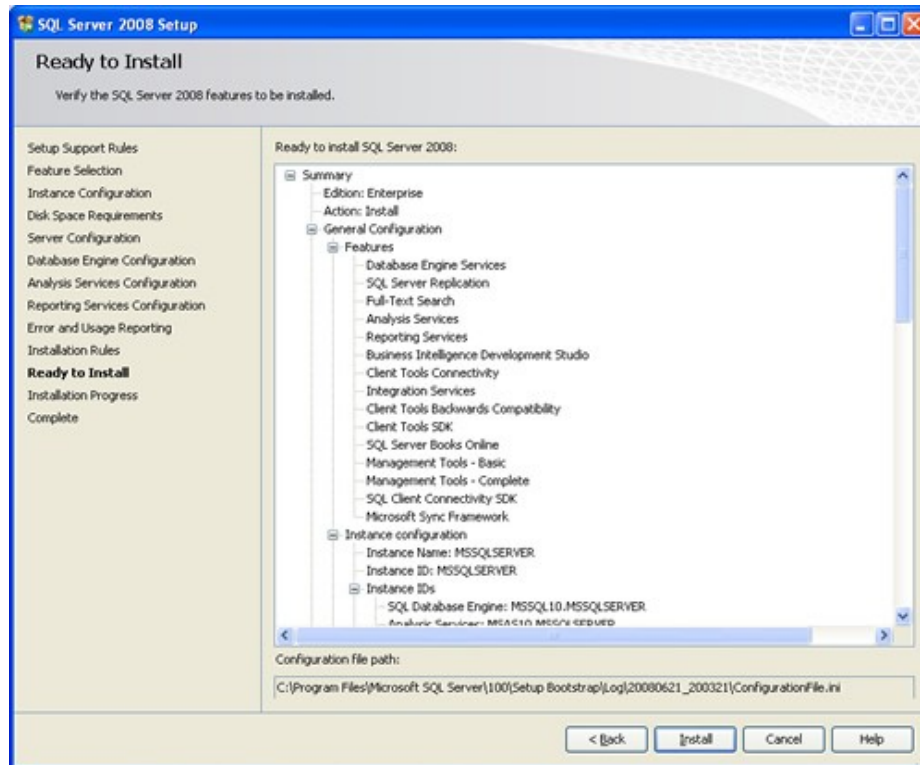
Click **Next** to continue.



Click **Next** to continue.



Click **Install** to complete the installation.



### 3. Post installation checklist

After installing all prerequisites, Sharpdial database and components, follow the checklist below to validate the software's proper functioning:

Step	Description/Action	Reference
1	Validate the monitoring service configuration file settings (database connection, monitored service and email configuration).	SharpDial_user_guide.pdf (section VII Configuration SharpDial monitoring service)
2	Validate the Process0 service configuration file (SQL settings, Site settings, logging).	SharpDial_user_guide.pdf (section VIII Configuration SharpDial Process0 service)
3	Validate the Engine configuration file (Service settings and traces)	SharpDial_user_guide.pdf (section X Configuration SharpDial engine service)
4	Disable Firewall	
5	Validate SQL server and SQL reporting services are running from Windows services management.	Sharpdial-Trobleshooting-guide.pdf (section IV SQL and Reporting service installation check)
6	Validate services startup type. All services startup type should be <b>Manual</b> . Engine service startup type should be <b>delayed automatic</b> .	
7	Validate all services are running, either from log files or from Windows services management.	
8	Validate SharpDial web interface web.config file.	SharpDial_user_guide.pdf (section XII SharpDial administration interface)
9	Open SharpDial web interface <a href="http://IP:PORT/SharpDial">http://IP:PORT/SharpDial</a> from web browser, and login using the default manager login credentials.	SharpDial_user_guide.pdf (section XII SharpDial administration interface)
10	In the web interface go to the sites link and update the default site to match your PBX IP address and configured CDR port.	SharpDial_user_guide.pdf (section XII SharpDial administration interface >> Organization administration >> Sites)
11	In the web interface, go to the Settings link >> Site Settings. Update the Frame ID and Tag ID (if needed) to match your PBX type and Process0 configuration respectively.	SharpDial_user_guide.pdf (section XII SharpDial administration interface >> Settings >> Site Setting)
12	Keep the default billing configuration, or alternatively, go to the 'Billing' section and update the prices / Lines Currency.	

	Also you can contact Libatel for a database script to match your country's billing patterns.	
13	Grant Read permissions on the license file provided by Libatel, then Upload it.	SharpDial_user_guide.pdf (section XII SharpDial administration interface >> Settings >> License)
14	Open Report Manager URL and validate the data source credentials (SQL Server username and password).	SharpDial_troubleshooting guide.pdf (Report Server Error: Cannot create a connection to data source)

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