MedQuist ™

The Learning Team

SpeechQ for Implementation and Support

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Course Manual

Student Guide

Product #

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SpeechQ for Radiology Legal Disclaimer

Speech recognition is a statistical process, and potential differences between what was dictated and what is interpreted by the speech engine are inherent in that process. Users should understand that different interpretations are possible and allow for review prior to authentication of the final transcription. It is the user's responsibility to review all documents created using MedQuist's SpeechQ for Radiology solution and to confirm the correct interpretation before using and authenticating the results of the speech recognition.

Customer 's clinicians shall have full responsibility for the care and well-being of their patients and any reliance by them upon documents created using a tool such as SpeechQ shall not diminish that responsibility.

How to Use This Manual

MedQuist instructional design is consistent with adult learning theory that stipulates experiential learning. Our instructional design is consistent with this idea in that it provides content delivery from an instructor and hands-on exercises that learners can complete with the instructor or independently.

Manuals contain:

- objectives and summaries at the module and topic level.

- content and exercises that improve job performance.

- practice exercises that enhance the transfer of knowledge, skills, and abilities from the classroom to the workplace.

Modules and Topics - Each manual consists of modules that group topics relating to specific tasks and skills. Each module lists objectives to provide specific goals for learning. Modules also supply a listing of prerequisite knowledge necessary for completing the topics covered in the module.

Performance and Application - Each module ends with practice exercises designed to help you learn the material presented in the modules.

Manual Features

References - References to keyboard keys are presented in **bold** type. Key combinations are referred to in the following format: **Alt + A**. This means hold down the **Alt** key and press the **A** key at the same time. Menu names and commands also appear in **bold**.

Special text - Information that you type or enter is presented in *italics* or on a separate line in a `typewriter font`.

Prompts - Messages displayed by programs are surrounded with quotes and also appear in **bold**. For example, DOS displays the prompt: **"Insert the disk to format."**

Special symbols - The following symbols indicate important notes:

⌃ This symbol points out a note of additional information.

☠ This symbol calls your attention to a very important note or warning.

♤ This symbol indicates a tip or shortcut for a procedure you just learned.

Q This symbol indicates a note that is specific to MedQuist or a recommended setting for a field. Absence of this note indicates that the field setting is determined by client specifications or other requirements.

📖 This symbol indicates a reference note.

About This Course

Course Description

This course covers implementation and support of SpeechQ for Radiology. Participants learn how to install SpeechQ and configure its components. This course also covers using the Data Definition Tool, using the Process Definition Tool, and integrating SpeechQ with existing client systems and using the Software Development kit. The closing topics cover troubleshooting and reporting defects.

Course Purpose

The purpose of this course is to provide participants with the required skills and knowledge to implement and support SpeechQ for Radiology.

Course Audience

This course is intended for MedQuist Implementation and Support personnel.

Course Prerequisites

Prior to taking this course, participants must have taken the following courses:

- Speech Recognition Introduction

- SpeechQ Workflow Introduction

- SpeechQ Introduction

Course Objectives

After completing this course, you will be able to:

- Install SpeechQ.

Module 1:
Installing SpeechQ

Module Description

This module covers all procedures for installing SpeechQ.

Module Performance Objectives

After completing this module, you will be able to:

- verify system requirements.

- describe the installation process.

- install SpeechQ Server.

- install SpeechQ Client.

- maintain and uninstall SpeechQ.

Module Prerequisites

To understand the concepts and perform the tasks in this module, you should know how to:

- install software.

Topic:
Verifying System Requirements

Before installing SpeechQ, you must verify the system requirements.

Defining System Configuration

SpeechQ is designed for PC-based workstations within a multi-user distributed system. System configuration is simple and straightforward in SpeechQ. Most of it is done automatically during the installation process.

Defining System Requirements

Your system must have:

- A server with access to the database engine. If possible, this should be a dedicated machine, but this is not compulsory.

- A database engine.

Defining Database Requirements

SpeechQ uses a database to coordinate the processing of the workflow, to keep track of reports and to synchronize the various SpeechQ applications. This database must be installed before SpeechQ Server is installed.

SpeechQ can operate with the following databases:

- Microsoft SQL Server (SQL Server 2000)

- SQL Server 2000 Desktop Engine (MSDE 2000)

Defining SpeechQ Server Operation

The SpeechQ Server operates in the following ways:

- There is no need to log on to the server.

- The SpeechQ Server must run at all times.

- The client modules (Report Station, System Administration, Workflow Administration, Patient Administration) work in connection with the SpeechQ Server, they do not need access to the database.

- The server uses a file system and stores all files outside the database, providing ample storage space.

- The SpeechQ Workflow Engine runs on the server and has access to the database.

When SpeechQ is used via the Internet no web server is needed. The client modules communicate directly with the Workflow Engine. This communication uses the HTTP protocol which is the standard protocol between web browsers and web servers.

Encryption of data via the Internet is managed by the Workflow Engine.

The SpeechQ system is started from the System Administration module. This also starts the Workflow Engine.

Defining Network Requirements

SpeechQ can operate in both LAN and WAN environments, as well as on stand-alone PCs. Users can choose between working online (connected to the system) or offline (disconnected from the system).

Networks with a transfer rate of at least 100 Mbit/s are recommended for LAN environments. TCP/IP protocol is mandatory for all PCs participating in the SpeechQ system.

✍ The first time a user logs on, it is recommended to do this in a LAN environment, since a large amount of data has to be transferred e.g. ARF, language model, ConText, etc.

Defining Network Prerequisite

Before you install SpeechQ, make sure that all participating SpeechQ PCs have the TCP/IP protocol installed prior to SpeechQ Server Setup and SpeechQ Client Setup.

Defining Software Requirements

SpeechQ requires the following software:

Defining Operating System Requirements

All SpeechQ Server and Client machines must run on one of the following operating systems:

- Microsoft Windows 2000

- Microsoft Windows XP

- Microsoft Windows 2003

Defining.NET Framework Requirements

.NET Framework 1.1 (latest Service Pack) is also needed for both client and server machines. If you do not have this, .NET Framework 1.1 SP1 is currently installed automatically as part of the SpeechQ installation.

Defining Database Environments:

One of the following database environments is required:

- Microsoft SQL Server 2000

- MSDE 2000 (Microsoft SQL Server 2000 Desktop Engine)

Defining Word Processor Requirements

All SpeechQ Server and Client machines must have one of the following word processors installed, for recognition/transcription:

- Microsoft Word 2000

- Microsoft Word XP

- Microsoft Word 2003

✍ All supported operating systems, and databases word processors need to have the latest Service Pack installed.

Defining Hardware Requirements

Specific hardware requirements are needed to ensure optimum performance from SpeechQ.

Defining Microsoft .NET Framework Requirements

The Microsoft .NET Framework must run on all PCs which have one or more of the SpeechQ Client programs installed. The following hardware is necessary, in addition to the specifications stated below for SpeechQ:

Item	Requirement
Hard disk space	160 MB (installation) 70 MB (runtime)

Defining SpeechQ Server Requirements

Item	Requirement
CPU	• x86 instruction set, e.g. Intel P4, Xeon; AMD Athlon XP, Athlon 64, Opteron • Single or multi CPU / hyperthreading preferably single CPU with higher clock. ⟳ Typical CPU: Intel P4, 3 GHz; Pentium M, 2 GHz; or AMD64 3000+
RAM	2 GB
Hard disk space	• SQL Server: 5 MB + ½ KB per patient, order, exam, report. • File system: 150 MB + 100 KB per report + 60 MB per recognition user.
Reliability and speed	Fast RAID disks, redundancy of power supply and network.

Defining SpeechQ Client Requirements

Item	Requirement
CPU	• x86 instruction set, e.g. Intel P4, Xeon; AMD Athlon XP, Athlon 64, Opteron • Single or multi CPU / hyperthreading preferably single CPU with higher clock. ✐ Typical CPU: Intel P4, 3 GHz; Pentium M, 2 GHz; or AMD64 3000+
RAM	1 GB
Hard disk space	• DB Cache: 60 MB + 10 MB per recognition user. • File system: 1.5 GB.
Hardware devices	▢ See the Recording/Transcription Requirements in the Help file.

Defining SpeechQ Module Requirements

In addition to the standard requirements for Client machines, the SpeechQ modules have the following requirements:

Module	Requirement
Report Station	• Preferably 100 MB/sec if speech recognition is used. • ~100MB data transfer the 1st time. • ~8MB ASR synchronisation each time (if ARF sync option enabled). • Job information sync + list updates (up to 1 MB) each time. • Intolerable if less than (768/128 KB/sec.) bandwidth.

Module	Requirement
System Administration	• Continuous connection to the Server. • 10 MB/sec. • Needs a LAN connection to start/stop the service
Workflow Administration	• Continuous connection to the Server. • At least 48 KB/sec, will be slow if worklist management is done.
Patient Administration	• Continuous connection to the Server. • At least 10 MB/sec. • Needs direct TCP/IP connection to the SQL Server.

Defining General Requirements

Item	Requirement
Services	• FAX Service needed, if this option is selected. • SMTP Mail Service, if this option is selected
Networking (Firewall)	Ports 4000 and 5555 should be open for TCP/IP communication (and other ports for Accession Listener, SpeechLink and Updater).

Defining Recording/transcription Requirements

Users who create and process reports need various hardware devices, depending on their user role, e.g. microphone (SpeechMike), headphones, Foot Control. In this case the system also has certain audio requirements.

The following Philips accessories are recommended for use with SpeechQ:

Function	Accessories
Recording	- SpeechMike Pro LFH 6174 - SpeechMike Pro USB LFH 6274 - SpeechMike Classic LFH 6164/52 (American edition) - SpeechMike Classic USB LFH 6264/52 (American edition) - SpeechMike Pro Barcode Reader LFH 6184 - SpeechMike Pro USB Barcode Scanner LFH 6284 - SpeechMike Classic USB Barcode Scanner LFH 6294/52 (American edition)
Transcription	- Transcription set LFH 5120, consisting of Foot Control LFH 0210/90 and Headphones LFH 0234/10 - Transcription set 6220, consisting of Foot Control, headphones and USB Adapter - An adapter for serial port Foot Control

Defining Audio Requirements

When working with SpeechQ, your audio system should meet the following requirements:

- You need to have a Sound Blaster or compatible sound card installed unless you work with any SpeechMike of the USB product range or the USB Adapter LFH 6220.

- If you use a SpeechMike Pro LFH 6174, a SpeechMike Pro LFH 6184 or a SpeechMike Classic LFH 6164 for playback of dictations (i.e. as a loudspeaker), you need to have an amplified SPK OUT jack on your PC which supports passive speakers.

Topic:
Understanding the Installation Process

SpeechQ is installed with an installation wizard. This program guides you through the steps of the installation process and installs the SpeechQ Server, the SpeechMagic Server and all required software components. When the system resources are correctly configured, little or no manual effort is needed on startup and SpeechQ will automatically start the required programs.

The pages of the installation wizard explain how to proceed. For more detailed information, click the **Help** button (if available) or press the F1 key to display the respective topic from the Online Help.

When you are satisfied that the current page is correctly filled in, click the **Next** button to open the next page. If you want to change information on a previous page, click the **Back** button.

The database must be installed and running prior to starting SpeechQ Server setup. Make sure you have applied the latest Service Pack for your database.

All SpeechQ modules can be installed on all PCs.

Defining SpeechQ Architecture

All SpeechQ modules can be installed on all PCs. The user needs the appropriate access rights and password to access specific modules. Residents, Attendings and Medical Transcriptionists can work in offline operation.

The SpeechQ system is made up of the following components:

- The **SpeechQ Server** stores all relevant data for speech recognition and the workflow and hosts the SpeechQ Workflow Engine and the SpeechQ Database.

The recognition data consists of all the language-specific data which is used by the speech recognition system: the initial language model and acoustic reference files, the Language Package and the original ConText. When authors (i.e. Residents and Attendings) work in the SpeechQ system, some of this data is adapted and personalized, e.g. the acoustic reference file, the language model and the ConText Lexicon. Adaptation takes place on the client PCs which run the SpeechQ Report Station module. The adapted data is, however, synchronized with the data on the server so that authors can work on different client PCs in the network. This is done for each author individually; the original ConText on the server, for example, is not modified.

The workflow data consists of all the report-specific data which is used by the workflow management system: work type templates, Auto-texts and any other report-related data.

- The SpeechQ **System Administration** runs the corresponding module which is used for setting up the system, setting the system security, making backup, archive and restore settings and other system-related settings.

- The SpeechQ **Workflow Administration** runs the corresponding module which is used for setting up, monitoring and modifying the workflow in the SpeechQ system.

It may also host the **Process Definition Tool** which is used to modify existing or to create new workflow definitions.

- The SpeechQ **Patient Administration** runs the corresponding module for entering patient, examination and order information into the SpeechQ system. This module is to be used in combination with the **Data Definition Tool**. This tool creates the required database entries for the Patient Administration module. The Patient Administration allows you to operate SpeechQ stand-alone; i.e. in hospitals where no HIS or RIS is available.

It may also host **SpeechLink** which is used for exchanging patient and order information with a HIS/RIS.

✏ If the SpeechQ system is setup to use a HIS or RIS, the SpeechQ Patient Administration module is not needed.

- The SpeechQ **Report Station** are the client PCs which run the corresponding end-user module. These are workstations where Residents, Attendings and Medical Transcriptionists do most of their work.

Defining SpeechQ License Types

The license key entered when the SpeechQ Server is installed determines the type of license (concurrent user or workstation based) for the whole system.

Using a Concurrent User-Based License

SpeechQ uses a floating user licensing scheme. It is not possible for more users to log on than the number specified in the license key, although there may be more (deactivated) users installed overall.

This license key can be changed in the System Administration module. The license key can be upgraded (adding more users) or downgraded. It is not possible to downgrade a license key if too many users are installed or logged on to the system. To accomplish this downgrade, the appropriate number of users must be deactivated. The new user count is stored in the SpeechQ Database. At user logon the number of concurrent users must not exceed this value.

✏ Users can be activated and deactivated in the Workflow Administration module.

Using a Workstation Based License

If the license key entered during the SpeechQ Server installation signifies a workstation based license, a license key is then needed for every workstation on which SpeechQ Report Station is installed. With this system there is no need to upgrade the system-wide license. It is simply a matter of entering a new license key in the System Administration module when another workstation is added to the SpeechQ system.

With each workstation installation there is a five days free trial period. If a user tries to logon five days after installation an error message is displayed and the license key for this workstation must be entered in the System Administration module in order to access SpeechQ.

Considering Issues Prior to Installation

Before you start the installation process you should be aware of certain issues. These issues can affect decisions made during the installation process. Points to think about before installing SpeechQ:

- Make sure your system conforms to the system requirements:

  - Hardware requirements

  - Software requirements

  - Network requirements

- Make sure a database is installed and that you know the user name and password for accessing this database.

- Make sure Microsoft Word is installed on the PC on which the SpeechQ Server is to be installed.

- It is recommended that the SQL Server Service Manager and the SQL Enterprise Manager are closed during the SpeechQ Server installation.

Issues which affect the installation process and decisions taken during the installation process:

- Is .NET Framework installed?

- Is SpeechMagic Server/Database/Workstation installed?

- Do the SpeechQ Client PCs have a mapped drive to the SpeechMagic Server?

- Which type of SpeechQ license (concurrent user or workstation based) is to be applied?

- Will SpeechQ be used in conjunction with a HIS/RIS or be a stand-alone system?

- Do you want a silent Client setup?

- Do you want to install SpeechLink on the same PC as the SpeechQ Server or a different one?

Topic:
Installing SpeechQ Server

SpeechQ Server Setup comes with an installation wizard which will guide you through the installation process on this computer. Follow the links below for information on each installation wizard page. Some of the following pages may not be shown, depending on your system, on whether SpeechMagic is already installed and on certain decisions made during the installation process.

To install SpeechQ server, do the following:

1. Insert the SpeechQ CD.

2. Double-click the **My Computer** icon on the desktop.

3. Double-click the CD-ROM drive icon.

4. Open the **Server** folder.

5. Double-click **setup.exe**. The installation wizard displays:

 ☠ It is recommended that you to install SpeechQ Server before SpeechQ Client. If you install SpeechQ Client first, the settings you make cannot be checked.

6. Click **Next**. SpeechQ checks if you need to install Microsoft .NET Framework 1.1

 ✎ Depending on the PC, installing .NET Framework 1.1 may take some time.

 ✎ If .NET Framework 1.1 has been installed as part of the SpeechQ installation you must restart the PC. Do one of the following:

⇒ Select **Yes, I want to restart my computer now** and click **Finish** to restart the PC immediately. The SpeechQ installation wizard is automatically restarted once the PC has completed the restart process and you can continue to install SpeechQ.

⇒ Select **No, I will restart my computer later** and click **Finish** to exit the SpeechQ setup. You must restart the PC manually and restart the SpeechQ installation wizard manually to continue to install SpeechQ.

7. Click **Next**. The setup program automatically configures Microsoft Windows to the .NET Framework.

☞ If you install Microsoft Data Access 2.7 as part of the SpeechQ installation you must restart the PC.

☞ If your system is setup with SQL Server 2000, Microsoft Data Access 2.7 is installed as part of the SpeechQ Server setup. This enables the SpeechQ Server to connect to the database.

Do one of the following:

⇒ Select **Yes, I want to restart my computer now** and click **Finish** to restart the PC immediately. The SpeechQ installation wizard is automatically restarted once the PC has completed the restart process and you can continue to install SpeechQ.

⇒ Select **No, I will restart my computer later** and click **Finish** to exit the SpeechQ setup. You must restart the PC manually and restart the SpeechQ installation wizard manually to continue to install SpeechQ.

8. Click **Next**. The Customer Information dialog box displays:

9. Enter your **User name** in the text box.

☞ This information is for registration purposes only and is not used in the SpeechQ system.

10. Enter your **Company name** in the text box.

☞ Your company name is displayed on all SpeechQ welcome screens.

☞ The default information is taken from the **System Properties** dialog box.

11. Click **Next**. The License scheme dialog box displays:
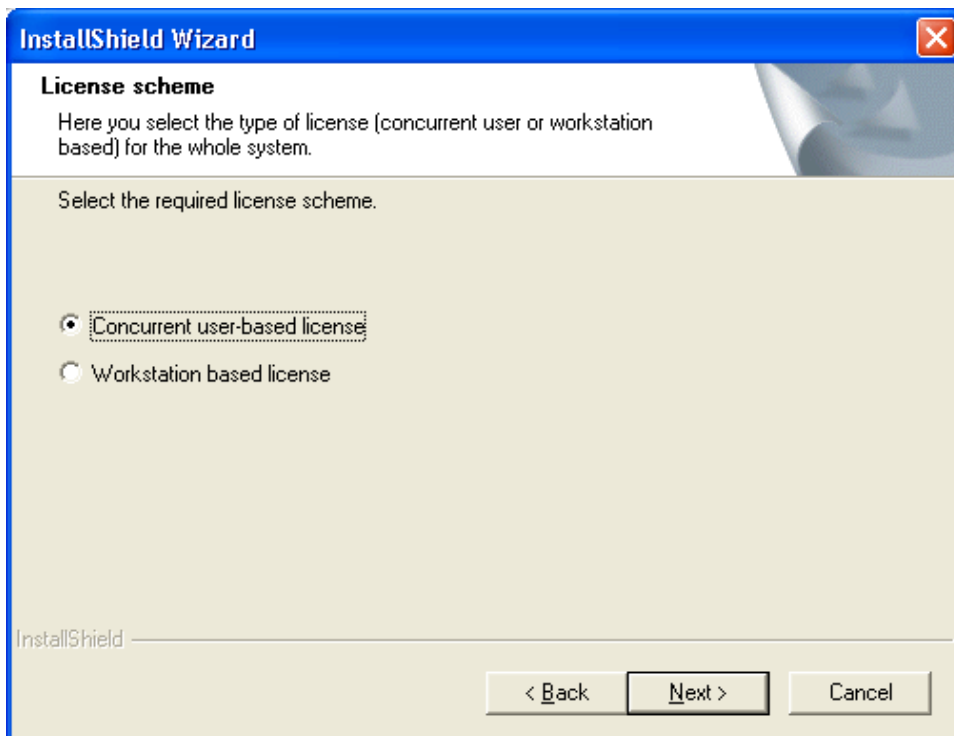
12. Select the required license scheme:

Option	Description
Concurrent user-based license	If you select this type of license, the number of activated users in the system is limited to the number specified in the license key.
Workstation based license	If you select this type of license, you must enter a license key for each workstation in the system, in the System Administration module. If not, workstations will not be allowed to connect to the server 5 days after SpeechQ is installed.

13. Click **Next**. The next dialog box prompts you to enter the license key based on the license scheme that you select:
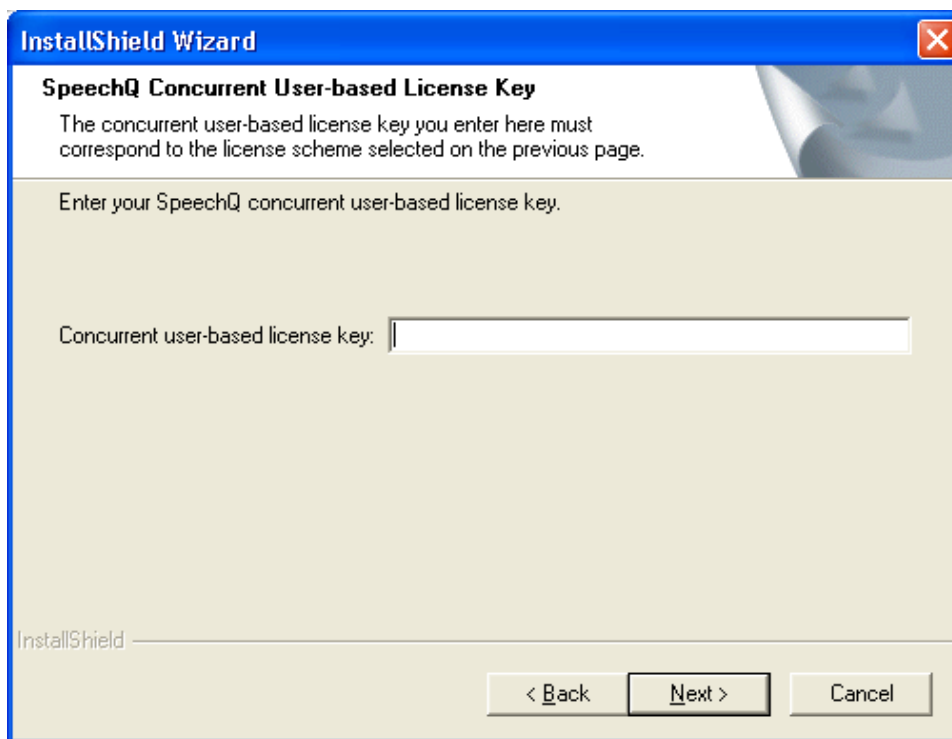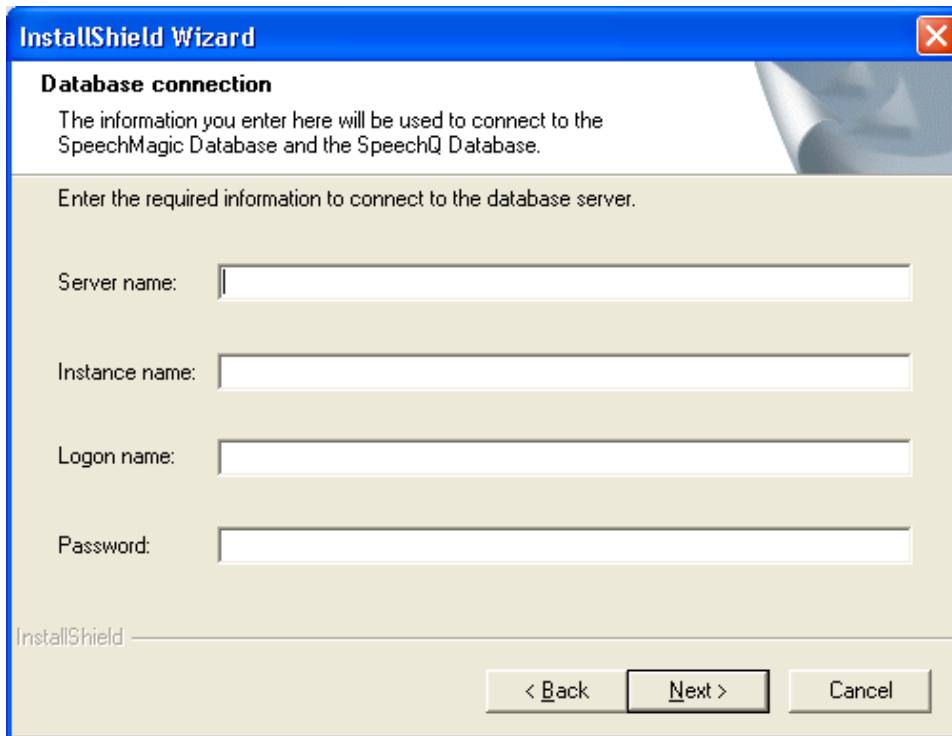
In this step, you are asked for license information. This license key determines the type of license (concurrent user or workstation based). If you enter here a concurrent user type license, the number of users who can work with the system is then displayed. If you enter here a workstation based license type you then need a license key for every PC the SpeechQ Report Station is installed on.

14. Enter the license key in the text box.

✐ By installing SpeechQ and entering the license key, you agree to comply with the copyright laws.

✐ If you have questions or problems regarding your license key, contact your local supplier.

15. Click **Next**. The Database connection dialog box displays:

☠ Make sure that the SQL Server Service Manager and the SQL Enterprise Manager are closed. If they are not closed this step takes much longer.

16. Enter the **Server name**—the PC name, the HTTP/IP address of the server on which the database is running—in the text box.

✍ To find the server name, click **Start > Settings** > **Control Panel** and double-click **System**. The name of the PC is displayed on the **Network Identification** tab of the **System Properties** dialog box. You can copy and paste this information.

✍ To find the HTTP/IP address, click **Start > Run** and enter *cmd* and click **OK**. In the opened DOS window type "*ipconfig*" and press **Enter**. The IP address is displayed. You can copy and paste this information.

17. If your system has been configured with an instance name, enter the **Instance name** in the text box.

✍ If your system has not been configured with an instance name leave this field empty.

✍ The instance name can be found in the SQL Server Service Manager: <PC name\instance name>. Double-click the icon on the taskbar. The SQL Server Service Manager is opened displaying the PC name (plus the instance name if so configured). You can copy and paste this information.

18. Enter the **Logon name** you use for accessing the database in the text box.

19. Enter the **Password** you use for accessing the database in the text box.

✍ The administrator who installed the database server can provide you with this information.

20. Click **Next**. The SpeechQ Database dialog box displays:

🖝 In this step, you create a SpeechQ database. The database name and the logon name must be unique.

21. Enter the **Database name** for the SpeechQ Database in the text box.

22. Enter the **Logon name** for the SpeechQ Database in the text box.

23. Enter a **Password** for the SpeechQ Database in the text box.

☠ You must enter a password. You cannot leave the Password text box empty.

24. Re-enter the password in the **Confirm password** text box**.**

25. Click **Next**. The SpeechQ Database dialog box displays.

☞ The SpeechQ Database dialog box does not display if SpeechMagic is already installed.

 In this step, you create a SpeechMagic database. The database name and the logon name must be unique. You cannot set an empty password.

26. Enter the **Database name** for the SpeechMagic Database in the text box.

27. Enter the **Logon name** for the SpeechMagic Database in the text box.

28. Enter a **Password** for the SpeechMagic Database in the text box.

29. Re-enter the password in the **Confirm password** text box**.**

 SpeechQ installs a service called 'SpeechQ Server Service' on your operating system. This service starts automatically when the PC is started. This service is used for connecting to the database and controlling the SpeechQ Workflow Engine.

 In this step, enter logon information for the SpeechQ service. The service will be started automatically when you start up the PC using this logon information.

30. Enter your **Logon name** in the text box.

✐ Your logon name is your domain name and Windows user name. You must use the convention *Domain name\Logon name*.

☠ You must be a Windows administrator.

31. Enter your Windows **Password** in the text box.

☠ This password is case-sensitive.

32. Re-enter your Windows password in the **Confirm password** text box.

✐ The password cannot be validated here, the only check is whether the same password is entered twice. If this password is not correct setup will continue, however the service will not be able to start.

33. Click **Next**. The Patient Administration System dialog box displays:
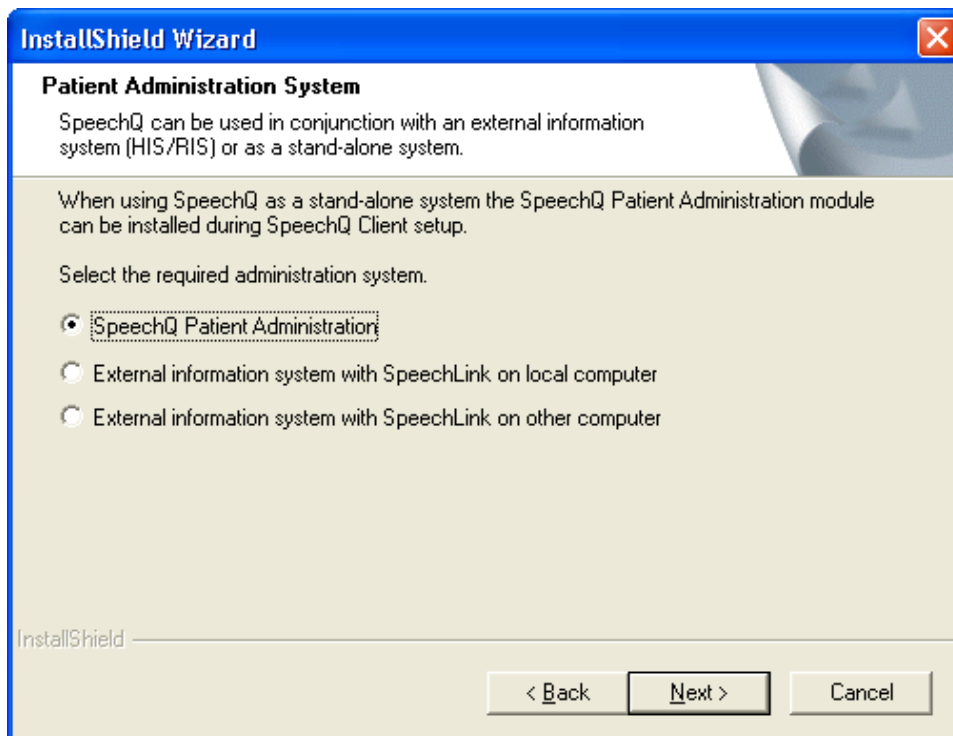
SpeechQ can be used in conjunction with a HIS/RIS or be a stand-alone system. Once this decision has been made it cannot be reversed after the installation process is complete.

In this step, you specify whether SpeechQ will connect with an existing hospital information system (HIS/RIS) or whether the SpeechQ Patient Administration module will be used to enter patient and order information.

34. Select one of the following options:

   ⇒ Select **SpeechQ Patient Administration i**f SpeechQ is to be a stand-alone system. The SpeechQ Patient Administration module will be installed as part of the SpeechQ Client setup.

   ✑ This is the default setting.

   ⇒ Select **External information system with SpeechLink on local computer** if SpeechQ is to be used in conjunction with a HIS/RIS. SpeechLink will be installed automatically on the same computer as the SpeechQ Server.

   ⇒ Select **External information system with SpeechLink on other computer** if SpeechQ is to be used in conjunction with a HIS/RIS. SpeechLink must be installed manually on a different computer to the SpeechQ Server.

   SpeechLink is an interface module that provides a means for the exchange of information between a Healthcare Information System (HIS/RIS) and SpeechQ.

   📖 For more information on SpeechLink refer to the *SpeechQ Data Definition Tool Online Help*.

35. Click **Next**. The SpeechQ Destination Folder dialog box displays:
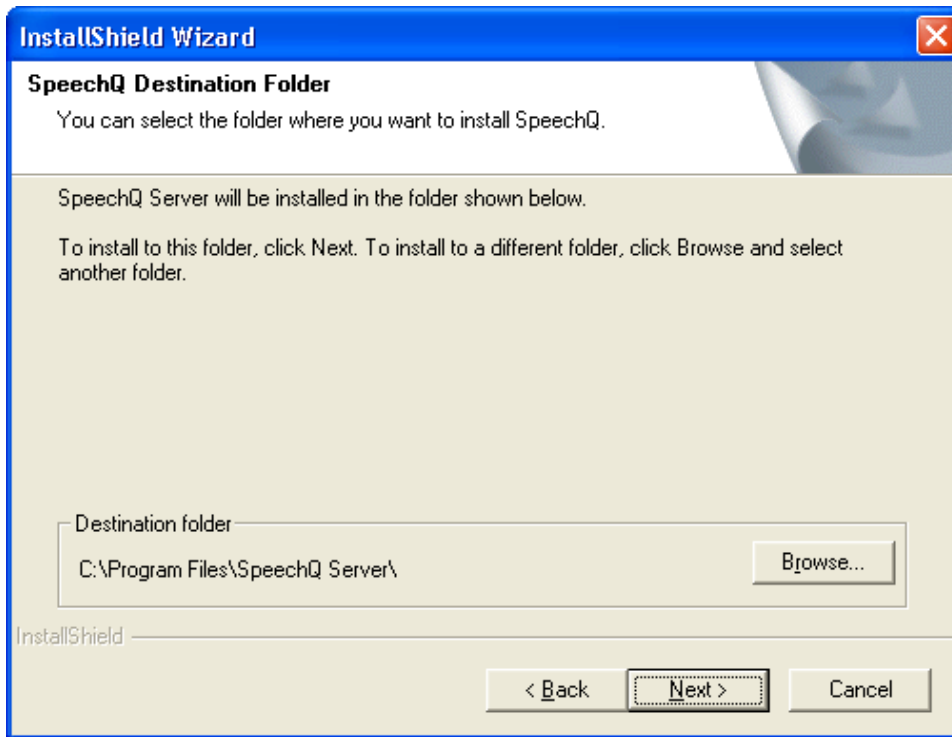
In this step, you can define where all the necessary program files and data files, which make up the SpeechQ Server, are to be installed.

✏ To install SpeechQ to another folder, click the **Browse** button and select another folder.

36. Click **Next**. The Start Copying Files dialog box displays:

SpeechQ for Implementation and Support
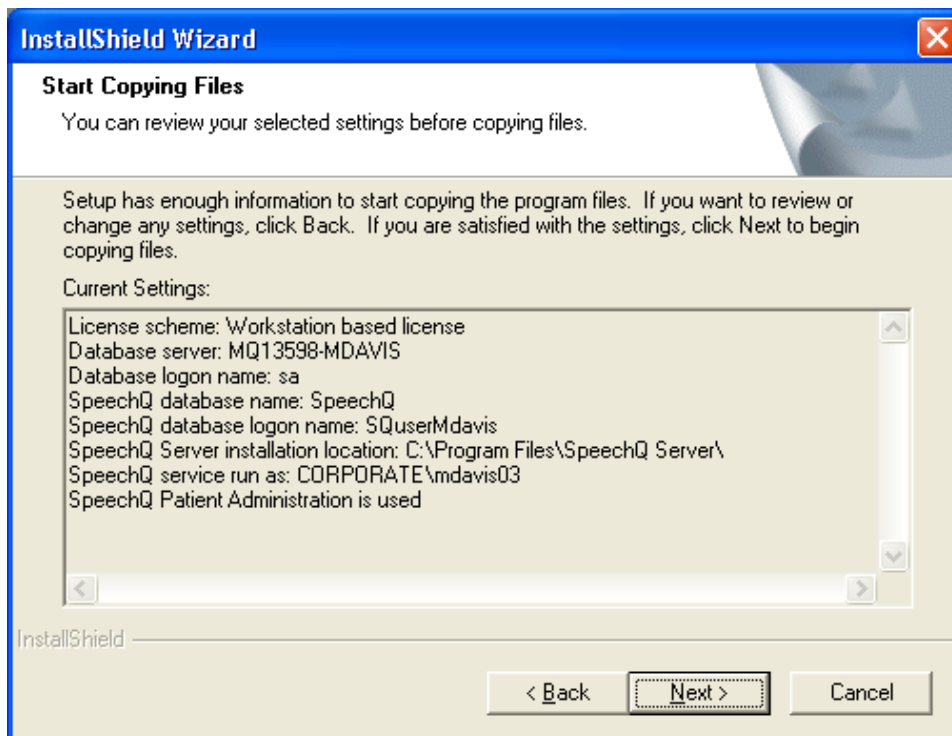
37. Verify your selected settings before in the **Current settings** box. The installation wizard displays the installation progress. When the wizard finishes copying all SpeechQ files, the following dialog box displays:
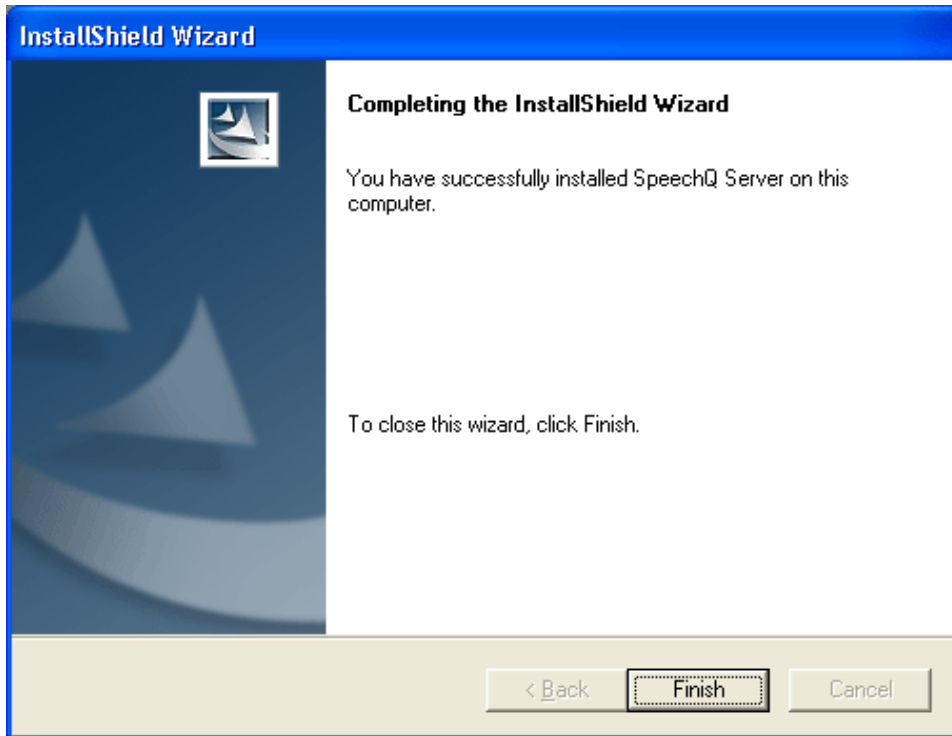
38. To exit SpeechQ Server setup, click **Finish**. The SpeechQ Server starts automatically.

39. You can now proceed with SpeechQ Client setup, on this or another PC.

✏ If Microsoft .NET was not installed prior to installation then you might be asked to restart the PC.

Installing SpeechLink Manually

To install SpeechLink on a different computer to the SpeechQ Server (for performance reasons), do the following:

1. Make sure that the following components are installed on the designated SpeechLink server computer:

   - Microsoft .NET Framework 1.1

   - Microsoft .NET Framework 1.1 Service Pack 1

   - Microsoft Data Access 2.7 SP1

2. Browse to the folder BIN\SpeechLink in the CD-Rom. Copy the content of this folder to the SpeechLink server computer and execute install.bat to create the SpeechLink service (you will need administrator rights to do this).

   This installs the SpeechLink service with a manual start and under local system account. The preferred service setting should be changed manually (for example, a manual start and local system account).

3. On the SpeechLink server change the value of SpeechLink.Configuration\ReportQuery\Server to the name of the SpeechQ Server in <SpeechLink root>\SpeechLink.Configuration.xml.

4. On the SpeechLink server change the database connection settings in <SpeechLink root>\DBConnection.ini. Only the SpeechQ section is used in SpeechLink.

5. On the SpeechQ Server change the value of GeneralExportConfig\Server to the name of the SpeechLink server in the file <SpeechQ Server root>\SpeechQ\GeneralExportConfig\risdelivery.xml.

   ✍ The functionality of a remote SpeechLink is the same as a local SpeechLink.

Topic:
Installing SpeechQ Client

SpeechQ Client Setup comes with an installation wizard which will guide you through the installation process on this computer. Follow the links below for information on each installation wizard page. Some of the following pages may not be shown, depending on your system, on whether SpeechMagic is already installed, and on certain decisions made during the installation process. You can also run a silent setup.

> ✎ It is not necessary to have the workflow engine running to install SpeechQ Client.

To install SpeechQ client, do the following:

1. Insert the SpeechQ CD.

2. Double-click the **My Computer** icon on the desktop.

3. Double-click the CD-ROM drive icon.

4. Open the **Client** folder.

5. Double-click the **setup.exe** file. The installation wizard displays:

    ☠ It is recommended that you to install SpeechQ Server before SpeechQ Client. If you install SpeechQ Client first, the settings you make cannot be checked.

6. Click **Next**. SpeechQ checks if you need to install Microsoft .NET Framework 1.1

    ☞ Depending on the PC, installing .NET Framework 1.1 may take some time.

    ☞ If .NET Framework 1.1 has been installed as part of the SpeechQ installation you must restart the PC. Do one of the following:

⇒ Select **Yes, I want to restart my computer now** and click **Finish** to restart the PC immediately. The SpeechQ installation wizard is automatically restarted once the PC has completed the restart process and you can continue to install SpeechQ.

⇒ Select **No, I will restart my computer later** and click **Finish** to exit the SpeechQ setup. You must restart the PC manually and restart the SpeechQ installation wizard manually to continue to install SpeechQ.

7. Click **Next**. The setup program automatically configures Microsoft Windows to the .NET Framework.

✍ If you install Microsoft Data Access 2.7 as part of the SpeechQ installation you must restart the PC.

✍ If your system is setup with SQL Server 2000, Microsoft Data Access 2.7 is installed as part of the SpeechQ Server setup. This enables the SpeechQ Server to connect to the database.

Do one of the following:

⇒ Select **Yes, I want to restart my computer now** and click **Finish** to restart the PC immediately. The SpeechQ installation wizard is automatically restarted once the PC has completed the restart process and you can continue to install SpeechQ.

⇒ Select **No, I will restart my computer later** and click **Finish** to exit the SpeechQ setup. You must restart the PC manually and restart the SpeechQ installation wizard manually to continue to install SpeechQ.

8. Click **Next**. The Customer Information dialog box displays:

- ✎ In this dialog box, enter information about the installation. The default information is taken from the **System Properties** dialog box.

9. Enter your **User name** in the text box.

10. Enter your **Company name** in the text box. Your company name displays on all SpeechQ welcome screens.

11. Click **Next**. The SpeechQ Server dialog box displays:
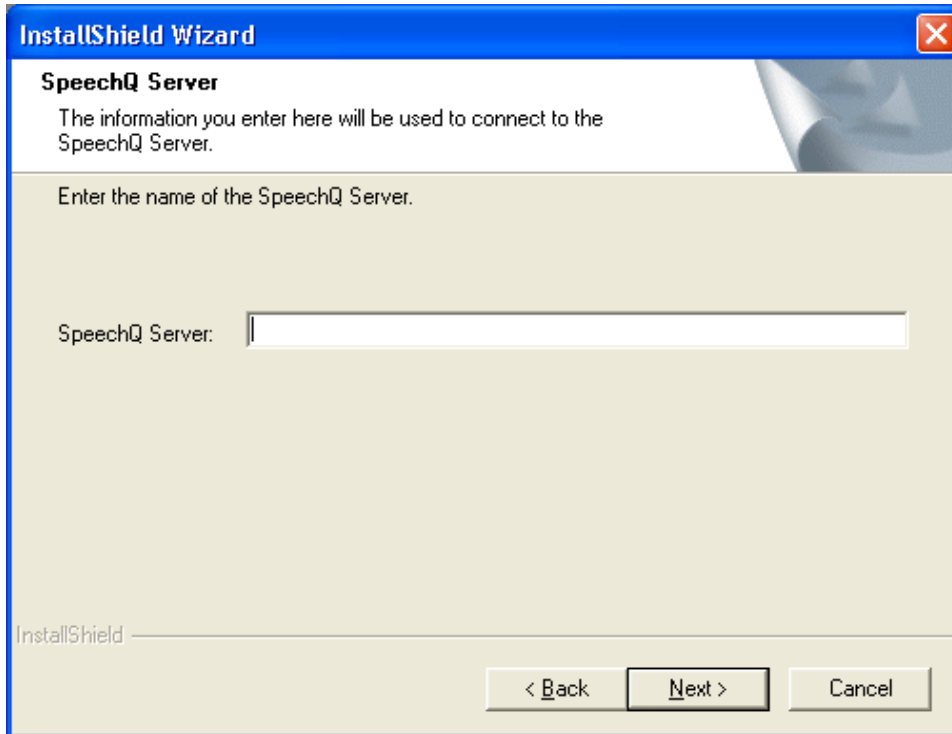
12. Enter the **SpeechQ Server** name in the text box.

✍ This is the PC name, the HTTP/IP address of the server on which the SpeechQ database is running.

✍ To find the server name of the server running the SpeechQ database, click **Start > Settings** > **Control Panel** and double-click **System**. The name of the PC is displayed on the **Network Identification** tab of the **System Properties** dialog box. You can copy and paste this information.

✍ To find the HTTP/IP address, click **Start > Run** and enter *cmd* and click **OK**. In the opened DOS window type *"ipconfig"* and press **Enter**. The IP address is displayed. You can copy and paste this information.

If the SpeechQ Server PC is in offline operation (the workflow engine is not running) when you are installing SpeechQ Client, a message is displayed stating that the server name cannot be verified. However, you can still continue the installation and connect to the SpeechQ Server later. The SpeechQ Server will be identified when it connects to the network. As soon as SpeechQ Client is in online operation, it will connect to the specified server.

13. Click **Next**. The Setup Type dialog box displays:
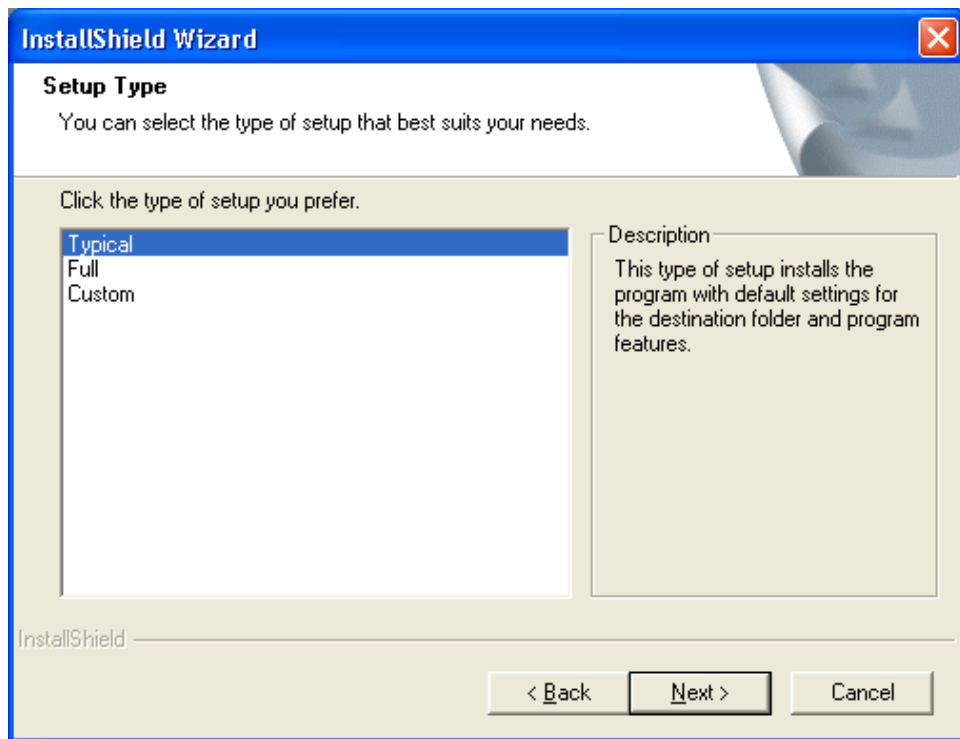
14. Select a setup type:

Option	Description
Typical	This type of setup installs only SpeechQ Report Station, Interactive and SpeechMagic Recorder, with default settings for the destination folder.

Option	Description
Full	This type of setup installs the program with all program features: SpeechQ Report Station, System Administration and Workflow Administration, Patient Administration (this depends on the SpeechQ Server installation setting), Data Definition Tool, Process Definition Tool, Interactive and SpeechMagic Recorder. You can specify the destination folder.
Custom	This type of setup enables you to specify the destination folder and the program features to be installed.

🖝 SpeechMagic Recorder is a professional dictation software program with enhanced recording, playback and positioning functions. It enables Report Station users to create, edit and save dictations as sound files. Interactive is a software program that enables Report Station users to use Command & Control.

🖝 If you select **Custom**, select the components you want installed.

- SpeechQ Report Station

- Workflow Administration

- System Administration

- Patient Administration (this depends on the setting made during the SpeechQ Server installation)

- Data Definition Tool

- Process Definition Tool

- Speech Processing—provides advanced speech recognition functionality including Command & Control, Auto-texts, spelling recognition, etc. It is not possible to deselect SpeechQ Report Station here if **Speech Processing** is selected.

    ✍ SpeechMagic Recorder is installed automatically with this type of setup.

    ✍ As you select and clear options you can view the required disk space and the available disk space on the C drive.

15. Click **Next**. The SpeechQ Destination folder dialog box displays:
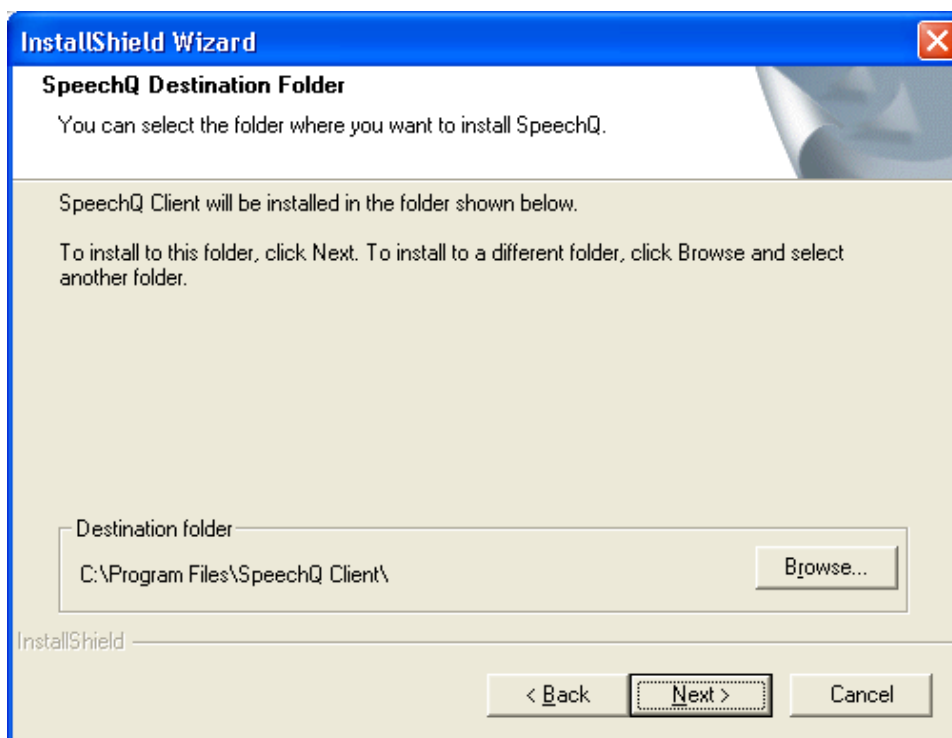
    ✍ To install SpeechQ Client to another folder, click the **Browse** button and select another folder.

16. Click **Next** to install SpeechQ Client to the default **Destination folder**.

17. Click **Next**. The SpeechMike Driver dialog box displays.

18. Select the control device(s) you will be using in conjunction with SpeechQ.

19. Click **Next**. The DPM Download/Configuration 2.0 dialog box displays:
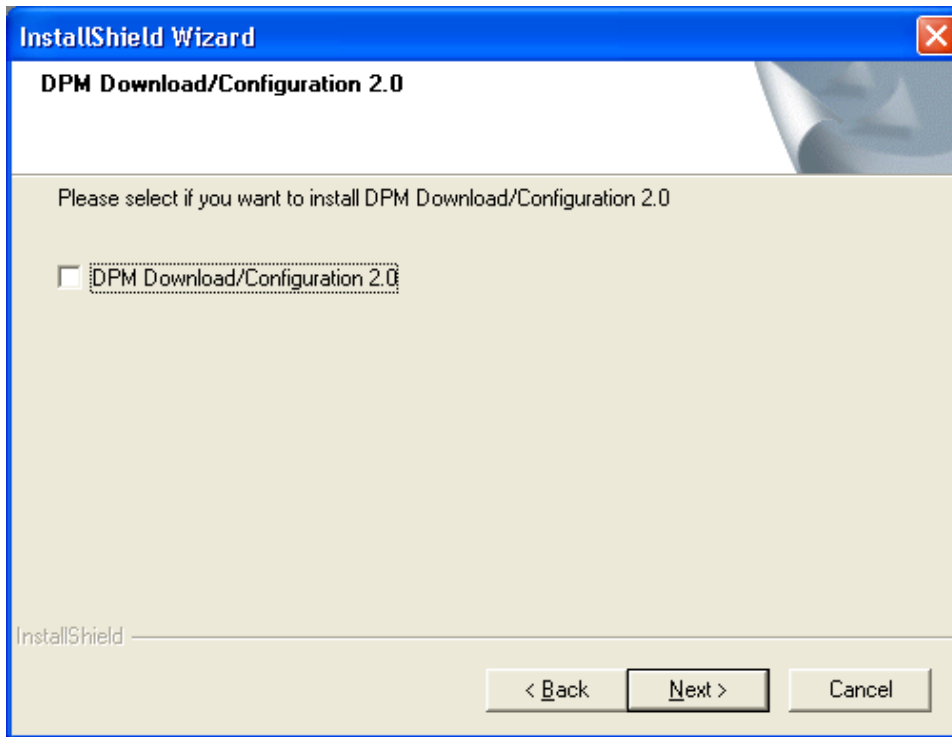
20. Select if you want to install DPM Download/Configuration 2.0.

✐ This software enables you to import files from a DPM into SpeechQ Report Station, as well as configure your DPM device from the Report Station module itself.

✐ If you choose not to install this software, you will still be able to import DPM files manually. You can also install this software at a later date; contact your System Administrator.

21. Click **Next**. The Start Copying Files dialog displays:
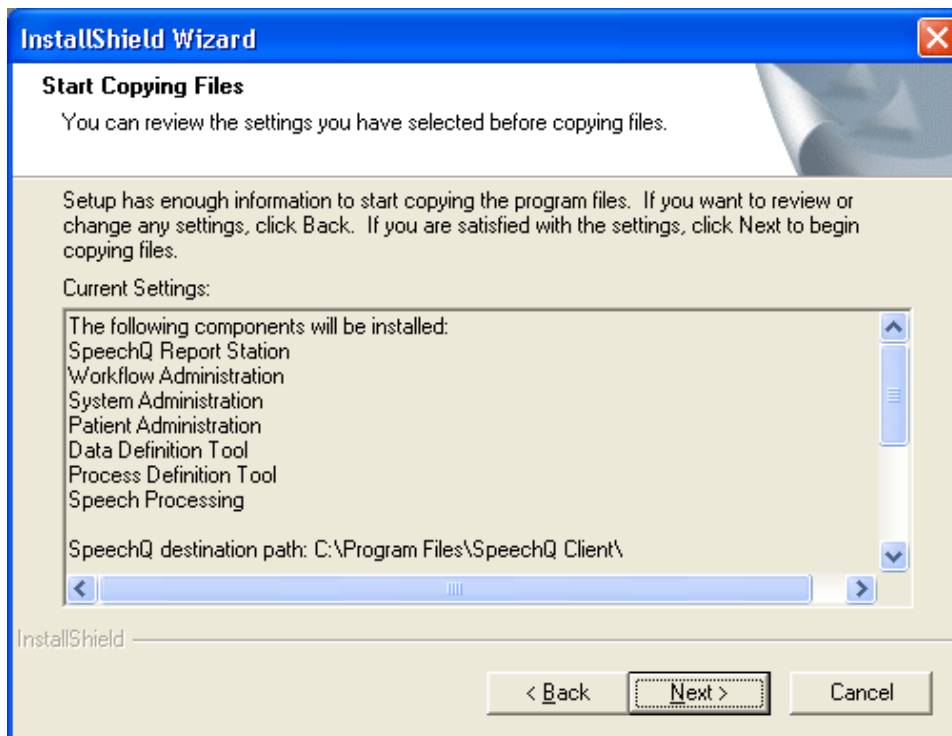
22. View your selected settings and programs before copying the installation files in the **Current settings** box.

23. Click **Next**. The installation wizard displays the installation progress. When the wizard finishes copying all SpeechQ files, you are notified that SpeechQ Client Setup is complete.

24. Click **Finish**. SpeechQ client installation is complete.

✎ To view SpeechQ components installed, click **Start > Programs** > **SpeechQ**. This displays a menu with all SpeechQ components you have selected during SpeechQ Client installation.

✐ If Microsoft .NET was not installed prior to installation then you might be asked to restart the PC.

Installing SpeechQ Client Using Silent Setup

SpeechQ Client setup allows the recording of a setup response file which can be used to run silent installations.

To record a setup response file use a command line similar to the following (the recording operation also completes the installation):

```
setup.exe /r
/f1"c:\setup\SQClient.iss"
```

To execute silent install using a previously recorded response file use a command line similar to the following:

```
setup.exe /s
/f1"c:\setup\SQClient.iss"
```

Notes on Silent Setup

The following checks are enforced in record and silent mode too as well as normal mode (if one of these checks fails the setup will abort):

- MS Internet Explorer version check

- MS Word version check

- MS .NET Framework 1.1 check

- Needed disk space check

The following steps are skipped in both record and silent mode:

- MS .NET Framework 1.1 installation

- SpeechQ Server check

- Warning if target directory is not empty

The .NET Framework 1.1 must be preinstalled prior to recording an install or running a silent install. In record and silent mode, setup only checks if the framework is installed but will not install it. It must run as another silent install before the SpeechQ Client install.

Use the following command line parameter to install .NET Framework in silent mode:

```
dotnexfx.exe /q:a /c:"msiexec /i
netfx.msi /q"
```

The file dotnexfx.exe can be found in the following folder:

```
<SpeechQ_Client_Setup_Root>\Setup\Se
tup\dotnetfx
```

If the response file became invalid the silent setup exists without error message. If the setup process changes with a build then a previously recorded response file may not be used. In this case a new response file must be recorded.

Uninstalling Silent Setup

To record an uninstall response file use a command line similar to the following (the recording operation also completes the uninstallation):

```
setup.exe /x /r
/f1"c:\setup\SQClientUnist.iss"
```

To execute an uninstall using a previously recorded response file use a command line similar to the following.

```
setup.exe /x /s
/f1"c:\setup\SQClientUnist.iss"
```

or

```
"<Program Files>\Common
Files\InstallShield\Driver\7\Intel
32\IDriver.exe" /M{CD489274-54B4-
4919-B739-B07B1CA2D736} /s
/f1"c:\setup\SQClientUnist.iss"
```

Topic:
Uninstalling SpeechQ Server and Modifying SpeechQ Client Installations

SpeechQ enables you to carry out maintenance tasks on all system files and programs. You can perform maintenance tasks—modifying or removing client program features—or remove SpeechQ Server and all client data.

🖝 You must perform maintenance and uninstallation tasks must be done separately for SpeechQ Server and SpeechQ Client.

Performing Maintenance on the SpeechQ Server

Maintenance on the SpeechQ Server is done on the PC where the SpeechQ Server is installed. To start maintenance, click **Start > Settings** > **Control Panel** and double-click **Add/Remove Programs**.

When the **Add/Remove Programs** window is displayed, select **SpeechQ Server** and click the **Change/Remove** button.

Performing Maintenance on SpeechQ Clients

Maintenance on the SpeechQ Client is done on the PC where the SpeechQ Client is installed. To start maintenance, click, click **Start > Settings** > **Control Panel** and double-click **Add/Remove Programs**.

When the **Add/Remove Programs** window is displayed, select **SpeechQ Client** and click the **Change/Remove** button.

Uninstalling SpeechQ Server

When SpeechQ is uninstalled all programs and files relating to SpeechQ are removed.

If you installed SpeechMagic as part of the SpeechQ Server installation, when you uninstall SpeechQ Server, SpeechMagic is also uninstalled.

Uninstalling SpeechQ does not affect your Microsoft Word installation.

To uninstall SpeechQ server, follow the steps below:

1. Click **Start > Control Panel**. The Control Panel displays:
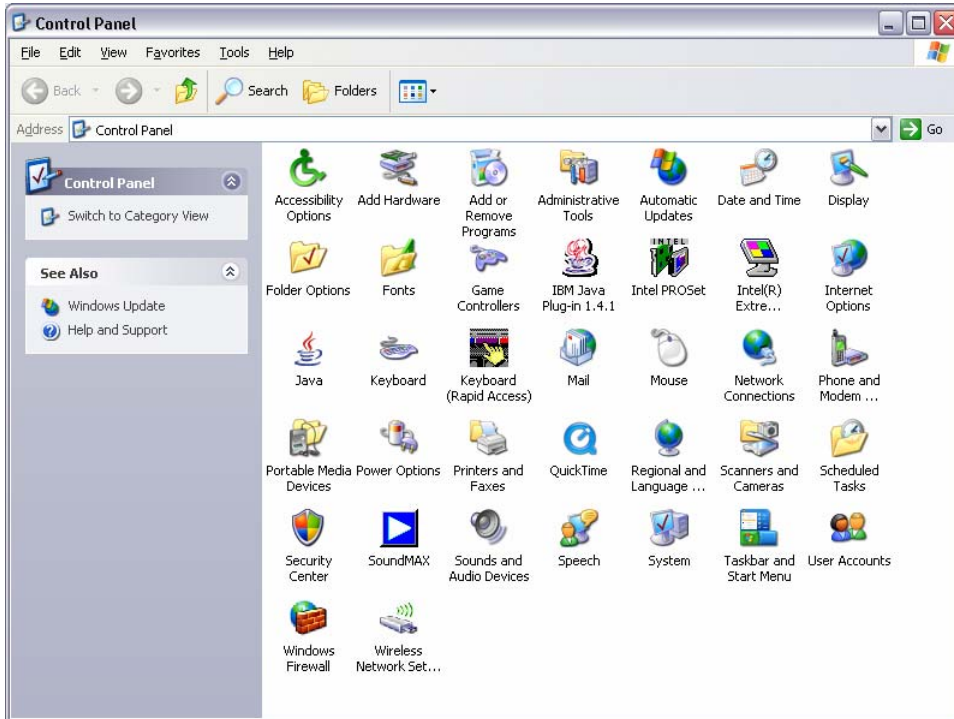
2. Double-click **Add or Remove Programs**. The Add or Remove
   Programs dialog box displays:
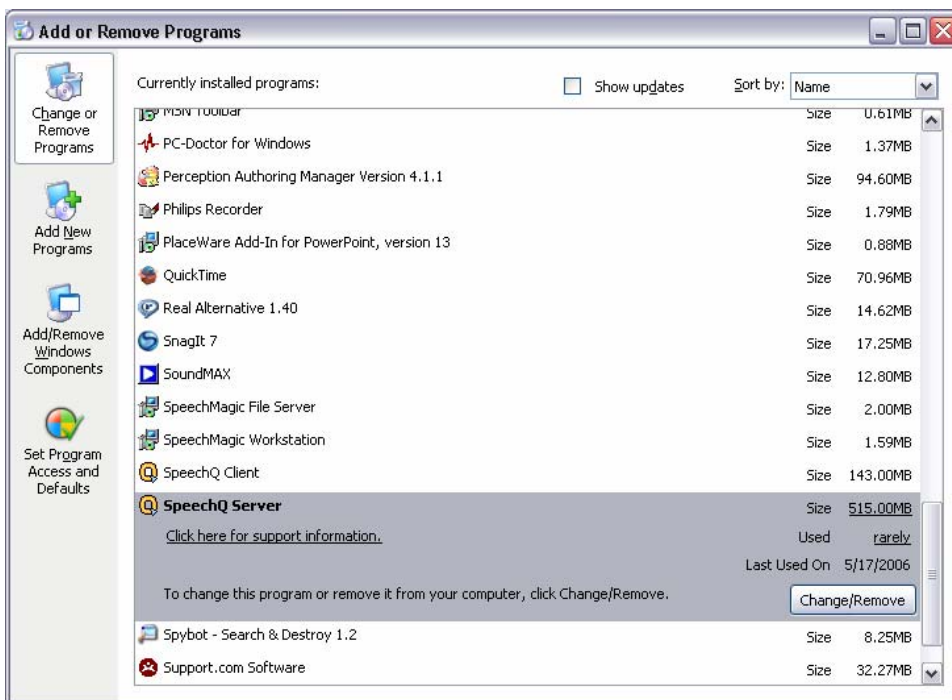
3. Select **SpeechQ Server** and click **Change/Remove**. The Install
    Shield Wizard displays:
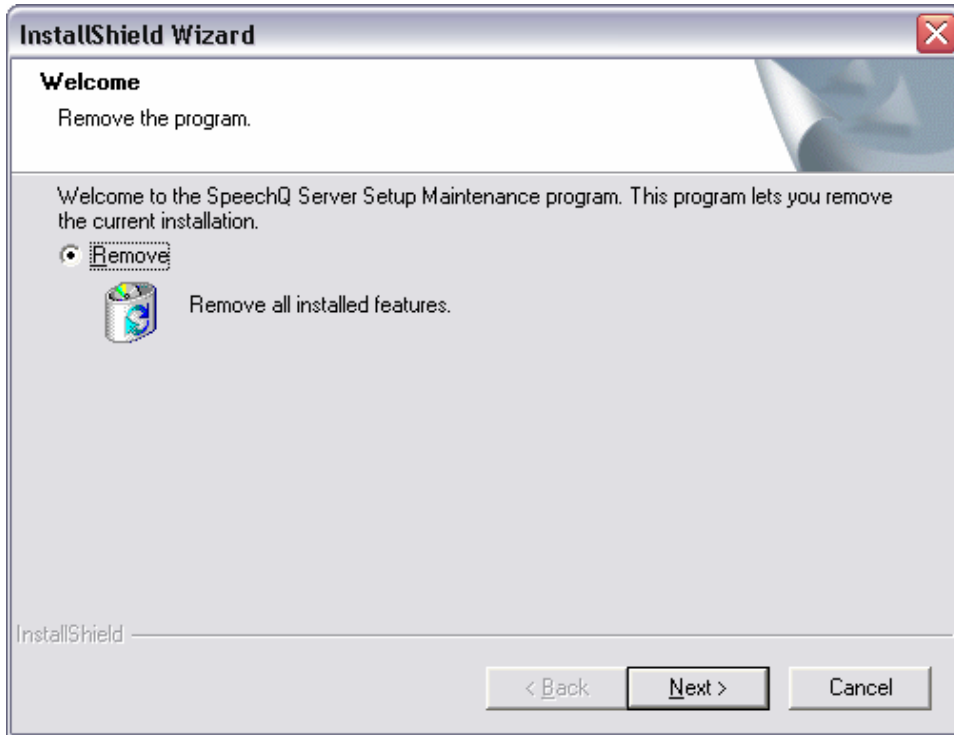
4. Select **Remove** and click **Next**. The Confirm Uninstall dialog
    displays:
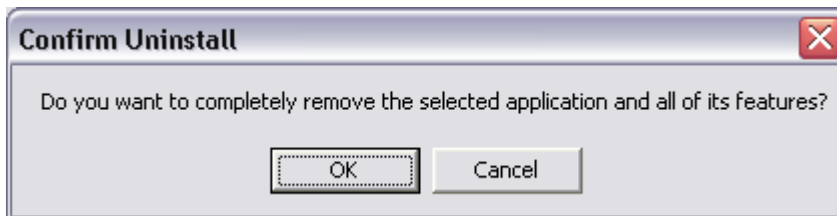
5. Click **OK**. The Database Connection dialog box displays:
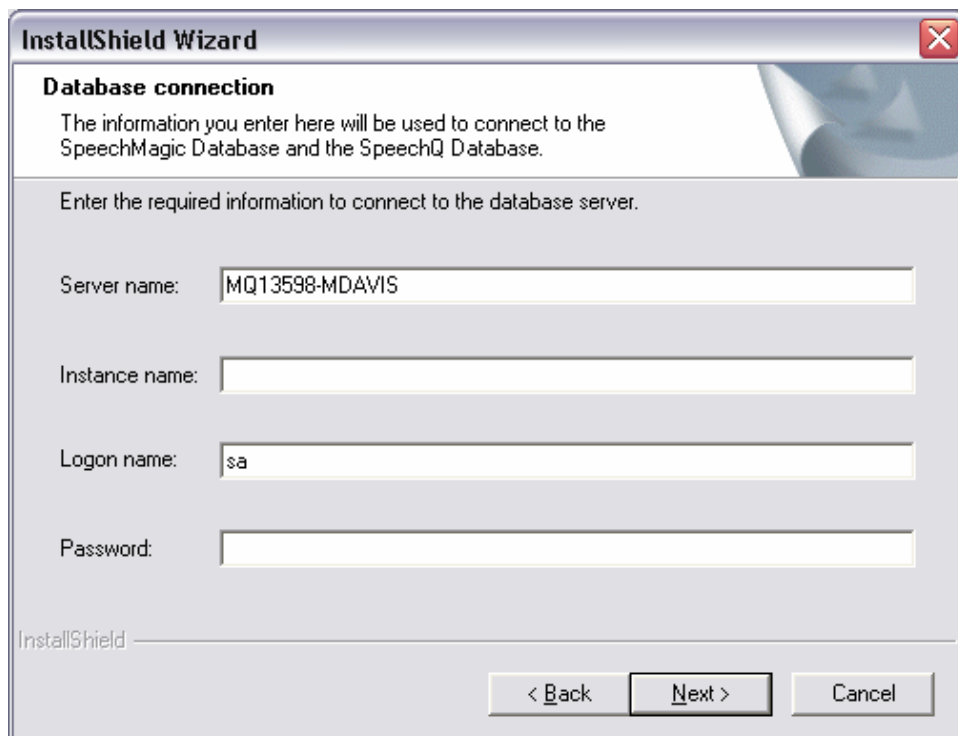
   🗘 The Installshield Wizard displays the server name and logon name. The administrator who installed the database server can provide you with the database connection information.

6. Verify that the server name and logon name are correct.

   🗘 If you entered an instance name when you installed Speech Server, enter the **Instance name** in the text box.

7. Enter the **Password** for accessing the database in the text box.

   ☠ You must enter the password for accessing the database.

8. Click **Next**.

9. Select **Remove** and click **Next**. A confirmation dialog box displays.

10. Click **Yes**. The Installshield Wizard displays a message that the uninstalltion is complete.

11. Click **Finish**. The InstallShield Wizard closes.

Modifying SpeechQ Client installation

You can modify a SpeechQ Client installation to add new program features, repair program features or remove currently installed features. You can select the modules you want installed and clear the modules you do not want:

- SpeechQ Report Station

- Workflow Administration

- System Administration

- Patient Administration (this depends on the setting made during the SpeechQ Server installation)

- Data Definition Tool

- Process Definition Tool

- Speech Recognition

To modify a SpeechQ Client installation, follow the steps below:

To uninstall SpeechQ server, follow the steps below:

1. Click **Start > Control Panel**. The Control Panel displays:
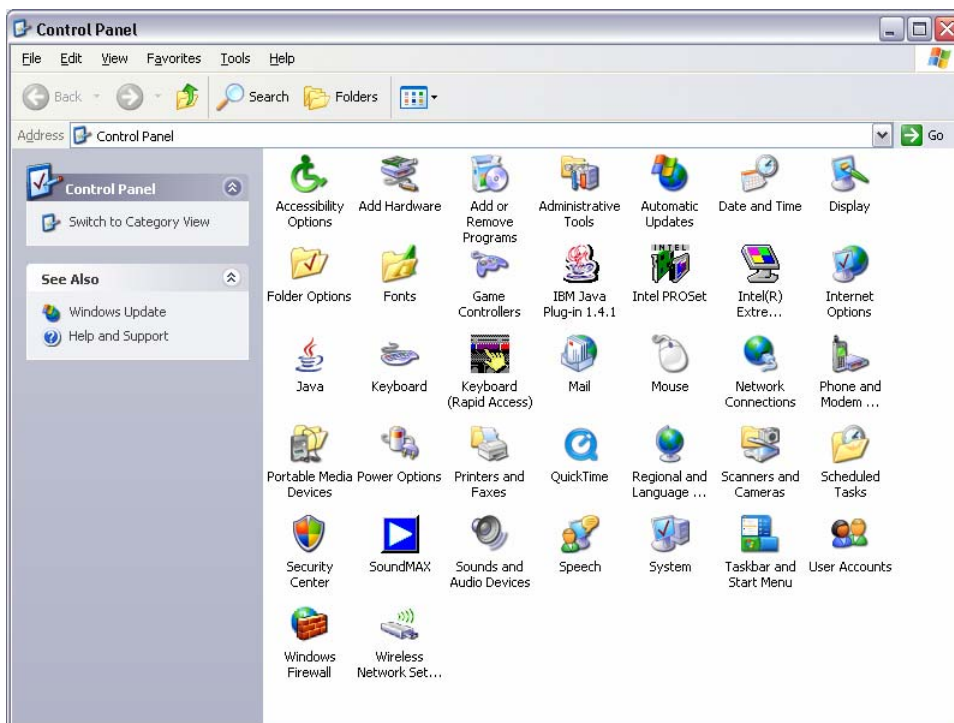
2. Double-click **Add or Remove Programs**. The Add or Remove
   Programs dialog box displays:
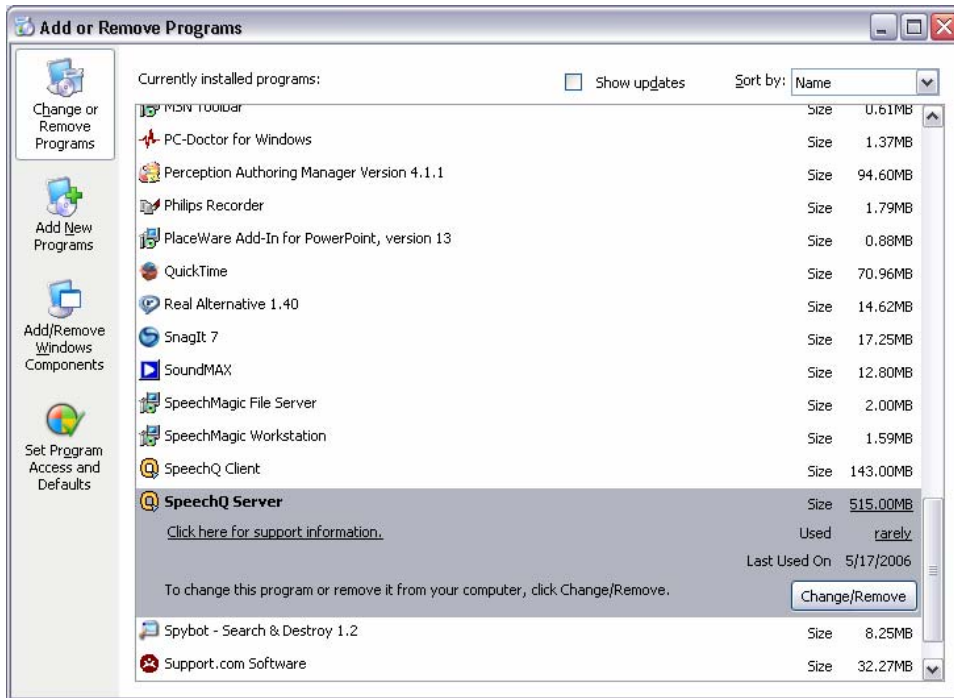
3. Select **SpeechQ Server** and click **Change/Remove**. The Install Shield Wizard displays:
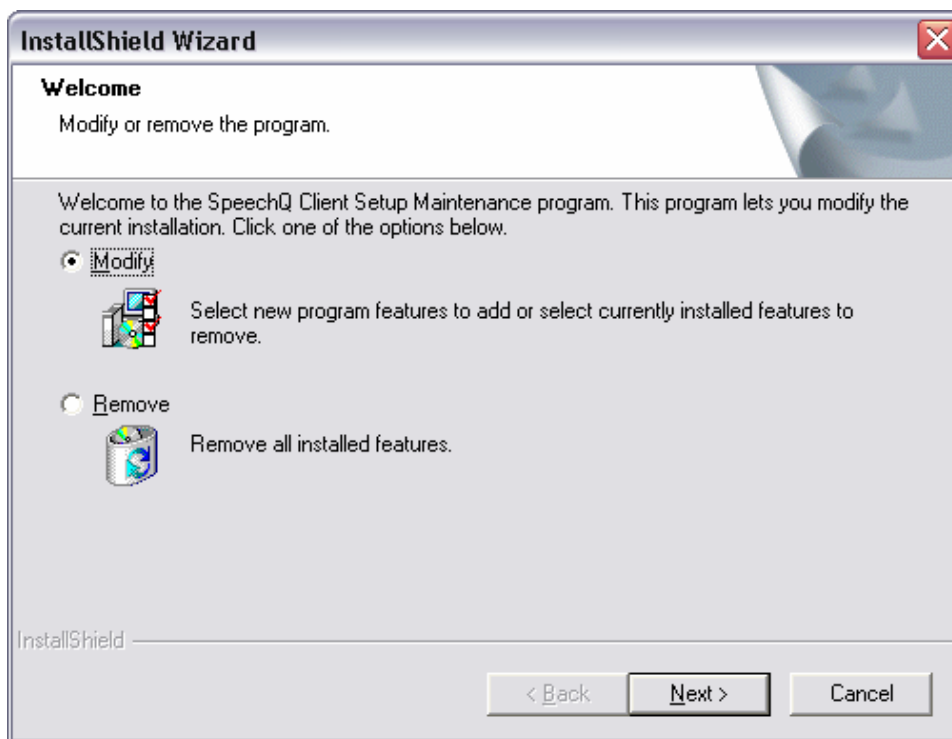
4. Select M**odify** and click **Next**. The Select Features dialog displays.

5. Select the features that you want to add or remove:

    ⇒ Click to clear the check boxes to features that you want to remove.

    ⇒ Select the check boxes of the features that you want to add.

6. Click **Next**. A confirmation dialog box displays.

7. Click **Yes**. The Installshield Wizard displays a message that the modification is complete.

8. Click **Finish**. The InstallShield Wizard closes.

Module 2:
Using the Data Definition Tool

Module Description

This module covers using the Data Definition Tool. Topics in this module cover

Module Performance Objectives

After completing this module, you will be able to:

- log on to the SpeechQ Data Definition Tool.

- configure data sources.

- use metadata.

- select columns.

- use Quick Filters.

- create indices.

- use lookup tables.

- add and delete images.

- save and load configurations.

- configure XML.

- configure SpeechLink

- configure interfaces.

- define message content.

- work with transactions.

Module Prerequisites

To understand the concepts and perform the tasks in this module, you should know how to:

- [Insert module prerequisites.]

Topic:
Understanding New Features and Logging On

The SpeechQ Data Definition Tool defines the way in which patient, order and examination information is stored and displayed in the Report Station module. How you use this tool depends on how SpeechQ is configured to receive this information. The Data Definition Tool enables you to configure those parts of the SpeechQ Database used for the storage and presentation of patient, order and examination information.

This application is intended to be used by an expert in Healthcare Information Systems and should also be familiar with the concepts of Relational Database Management Systems.

SpeechQ can interface with Healthcare Information Systems that provide it with information on patients, orders and examinations.

SpeechQ will provide the healthcare information system with reports created by a resident or attending physician.

SpeechQ can also be used in a hospital or clinic with no direct interface to a healthcare information system. In this case the Patient Administration module will be used to enter patient, order and examination information. The Data Definition Tool enables you to configure the Patient Administration module to suit your working practice.

☠ Because the Data Definition Tool directly affects the content and performance of the SpeechQ Database, it is strongly recommended that you make a backup of the SpeechQ Database before you start working with this module.

Logging on to SpeechQ Data Definition Tool

Changes cannot be made to the SpeechQ Database using the Data Definition Tool while another SpeechQ module or program is running. Before you start the Data Definition tool, make sure that all other SpeechQ modules and programs, including the SpeechQ Server Service (and in the case of connection to a HIS/RIS, the SpeechLink Service), are shut down.

✏ It is not recommended to stop the SpeechQ Server Service via the **Control Panel** of your Windows operating system. You can stop the SpeechQ Server Service and the SpeechLink Service directly from the Data Definition Tool logon dialog box.

To log on to Data Definition Tool, do the following:

1. Start up your PC.

2. Click **Start > Programs > SpeechQ** > **Data Definition Tool**.

3. Enter the database information:

Text Box/Option	Procedure
SQL Server	Enter the name of the PC on which the SQL Server is installed.
Database	Enter the name of the SpeechQ Database.
Windows authentication	Select this option to use Windows authentication.
SQL Server authentication	Select this option to use SQL Server authentication.

Text Box/Option	Procedure
Logon name	If you select SQL Server authentication, enter your SQL Server logon name.
Password	If you select SQL Server authentication, enter your SQL Server password.

✎ If you stopped the SpeechQ Server Service directly from the Data Definition Tool, the SpeechQ Server Service and SpeechLink Service will be automatically restarted when you close the Data Definition Tool.

4. Click **Stop**. The SpeechQ Server Service (and SpeechLink Service) stops.

5. Click **OK**.

The Data Definition Tool Window

The Data Definition Tool window is composed of the following elements:

- Menu bar

- Definition bar

- Data Definition Tool panes

Menu bar

The menu bar has the following menus and options:

- **File** menu

  - **Exit**—closes the Data Definition Tool window and logs you off.

  - **Actions** menu—the commands in this menu correspond to the available buttons on the Actions bar, enabling you to open the various panes of the Data Definition Tool via keyboard shortcuts, without having to use the mouse.

  - **Help** menu

    - **Contents and Index**—accesses the Online Help system.

    - **About**—displays general version and copyright information.

Definition Bar

Most user interaction with Data Definition Tool takes place via the **Definition** bar on the left of the main window. This bar provides buttons for all available Data Definition Tool functions, and is displayed the whole time the Data Definition Tool is open. For a full list of the **Definition** bar buttons and their functions.

Data Definition Tool Panes

The buttons on the **Definition** bar provide direct access to the different Data Definition Tool functions, such as adding columns to tables, defining Indices, etc. Clicking a button on the **Definition** bar opens the corresponding pane in the main window.

Most information in the data Definition Tool is displayed in tables. Rows in these tables can display the following icons:

Indicates a new entry.

Indicates that a change has been made to an existing entry.

If a table is displayed with more columns than can fit on one page, you can use the cursor to split the table by dragging the scroll bar icon in the bottom left corner.

In this way you can 'freeze' the first column (For example, Identifier, caption etc.) while scrolling left and right through the rest of the table.

Before you click another button to open a different pane you must either save any information you have entered by clicking **Apply**, or discard it by clicking **Cancel**.

The Definition Bar

The Definition bar has the following buttons:

Button	Description
Metadata	Enables you to modify the characteristics of tables and columns, and define how the columns display in the Patient Administration and Report Station modules.

Button	Description
Table	Enables you to add columns to SpeechQ tables.
Quick Filters	Enables you to define which quick search filters are displayed in the Orders and Patients Lists of the Report Station module.
Index	Enables you to add or modify table constraints. You can specify which columns of a table should be unique or should be used for making fast searches for table entries. For example you can specify that no two patients can have the same combination of first name and surname.
Lookup	Enables you to create drop-down lists (Lookup tables) and define the values they contain. You can configure some data fields to contain only values from these Lookup tables. ↪ This button is only available if SpeechQ is set up not to interface with a HIS/RIS.
Image	Enables you to configure which image types are used in SpeechQ.
Configuration	Enables you to save and load configurations, reset the configuration to the default setting, and generate reference files for configuration transformation and validation.
XML Configuration	Enables you to configure custom parent nodes for the data segments of transactions that have a dedicated other segment.

Topic:
Configuring Data Sources

The Data Definition Tool module defines the way in which patient, order and examination data is presented to the users of the Report Station module. This data can come from two sources:

- Patient Administration module

- HIS/RIS

Stand-alone Installation

In a stand-alone installation, all patient, order and examination information is entered manually by a Patient Administrator in the Patient Administration module. In the Data Definition Tool you define exactly what information can be entered, and how it is presented both to the Patient Administrator and to the users of the Report Station module.

Connecting to an External HIS/RIS

If your SpeechQ system is set up to interface with an external HIS/RIS, you must configure the system so that data transfer between the two is possible. This is done via the specialized tool, SpeechLink. You must also define how this information is presented to the user in the Report Station module.

Configuring Data for a Stand-alone Installation

In the Data Definition Tool you define what kind of information can be entered by the Patient Administrator (For example, patient properties, order properties, etc.). You also define how that information is stored and presented (For example, data types, Lookup tables, Drop-down etc.). Since many of the settings you make here are interrelated, it is recommended that you make them in the following order:

1. Start by entering all the Lookup tables that you will be using. These can be edited and deleted at any time, but it will save configuration time if you have them all prepared before you start to define the tables.

2. From the Table pane, define the property tables for patients, orders and examinations. In each case the default columns are already in place and cannot be modified. Add all the columns you need here—this forms the core database data for SpeechQ.

3. When you have created all the columns you need, you can now define their properties in the Metadata pane. This determines, for example, in which order the columns appear in the Patient Administration and Report Station modules.

4. Define identifier columns and value formats for each object.

5. Define the images used by your system.

6. Select which columns you want to use for indexing the database.

Once you close the Data Definition Tool, the Patient Administrator will be able to begin entering the information that Residents and Attendings need to process reports in the Report Station module.

Configuring Data for an HIS/RIS Installation

To make sure that your SpeechQ system interacts properly with a HIS/RIS, do the following:

1. In the Table pane, create the property columns that you need for patients, orders and examinations.

☠ Not only must their type correspond with the data coming from the HIS/RIS, but also their attributes (mandatory, part of primary key, etc.).

2. When you have created all the columns you need, you can now define their attributes in the Metadata pane. Pay particular attention to the values for:

   - PartOfPrimaryKey

   - XML Path Inbound

   - Mandatory

   - XML multiplicity

   - XMLLoopNode

   - XML Position

3. You can now also define identifier columns and value formats for each object. For orders or examinations you must also define which column contains the Desktop ID.

4. Define the images your system uses.

5. Select the columns you want to use for indexing the database.

When you close the Data Definition Tool, the information from the HIS/RIS is available to Report Station users.

Creating a Sample Database for a HIS/RIS Installation

SpeechQ provides a sample database to help you familiarize yourself with the process of setting up working database for a HIS/RIS installation. It also provides patient and order information so you can use this example for training purposes. To create the sample database, do the following:

1. Close all SpeechQ applications and stop any SpeechQ services that are running.

2. Do one of the following:

    ⇒ Start the DataDefinitionTool and load the SpeechLinkSample.sqc.

    ⇒ Configure the database manually, by configuring MTD according to how XML should be mapped to the DB (XMLPathInbound, PartofPrimaryKey, etc.). This step is only needed in the case that you would like to use other XML input than the enclosed XML sample files.

3. Configure SpeechLink by editing the SpeechLink.Configuration.xml and entering the appropriate settings.

4. Start the SpeechLink Service.

    ✑ The SpeechLink Service happens automatically when the Data Definition Tool module is closed.

5. Start the Workflow Engine or the SpeechQ Server Service (this also happens automatically when the Data Definition Tool module is closed).

6. Start SpeechQ Report Station module. Notice the configuration taken from MTD in the Patient, Order and Examination tabs.

7. Check inbound transactions by starting the SpeechLink Test application, loading one of the sample use cases (For example, usecase03.xml), and clicking **Send**.

    ✑ The Test application establishes a TCP socket connection to the SpeechLink Service and sends the XML data. You receive an ACK as indication that the transaction (Inserting a Patient with one order and 2 exams) has been successfully performed.

8. Check outbound transactions by doing the following:

   ⇒ Start the SpeechLink Test application.

   ⇒ Click the **Delivery** tab.

   ⇒ Start SpeechQ Report Station, select an order or examination, create a report, and finish and sign it.

⟁ The report has been delivered via a TCP socket connection to the test application (as indicated in the 'Received' textbox).

Content of the SpeechLink Installation

The following tables list the content of SpeechLink installation:

<Path>\SpeechQ\Server	Description
SpeechLinkSamples	Directory containing SpeechLink samples
SpeechLink.Service.exe.ini	Logging Configuration File for SpeechLink
SpeechLink.Configuration.xml	Configuration File for SpeechLink
RISServerCommon.dll	SpeechLink .NET Remoting Interface
SpeechQServers.remoting.config	SpeechLink & SpeechQ .NET Remoting Interface configuration
Base.dll	Base SpeechLink & SpeechQ assembly
SpeechLink.Service.exe	SpeechLink Windows Service
Readme.htm	This file
SpeechLink.Main.dll	Main SpeechLink assembly

<Path>\SpeechQ\Server	Description
DBConn.dll	Database Connection assembly
GeneralExp.dll	Regular Expression assembly
Ack.bin	Acknowledge binary definition file
Nak.bin	Not acknowledged binary definition file

The following Sample Configuration can be found on the Installation CD \SpeechLinkSamples directory:

SpeechLinkSamples	Description
SpeechLinkSample.sqc	Sample Data Definition Configuration for SpeechLink
usecase01.xml	Sample xml input according to SpeechLink-Help / use case 1
usecase02.xml	Sample xml input according to SpeechLink-Help / use case 2
usecase03.xml	Sample xml input according to SpeechLink-Help / use case 3
usecase04.xml	Sample xml input according to SpeechLink-Help / use case 4
usecase05.xml	Sample xml input according to SpeechLink-Help / use case 5
usecase06.xml	Sample xml input according to SpeechLink-Help / use case 6
usecase07.xml	Sample xml input according to SpeechLink-Help / use case 7

SpeechLinkSamples	Description
usecase08.xml	Sample xml input according to SpeechLink-Help / use case 8
usecase09.xml	Sample xml input according to SpeechLink-Help / use case 9
usecase10.xml	Sample xml input according to SpeechLink-Help / use case 10
usecase11.xml	Sample xml input according to SpeechLink-Help / use case 11
usecase12.xml	Sample xml input according to SpeechLink-Help / use case 12
usecase13.xml	Sample xml input according to SpeechLink-Help / use case 13
usecase14.xml	Sample xml input according to SpeechLink-Help / use case 14
usecase15.xml	Sample xml input according to SpeechLink-Help / use case 15
usecase16.xml	Sample xml input according to SpeechLink-Help / use case 16
usecase17.xml	Sample xml input according to SpeechLink-Help / use case 17
usecase18.xml	Sample xml input according to SpeechLink-Help / use case 18
usecase19.xml	Sample xml input according to SpeechLink-Help / use case 19
SLReport.xslt	SpeechLink Sample Report Transformation
SpeechLinkTest.exe	SpeechLink Test application

SpeechLinkSamples	Description
SpeechLinkTest.exe.xml	SpeechLink Test application configuration
SpeechLink_Demo.txt	Demo script briefly describing sample use cases

Topic:
Using Metadata

The Metadata pane enables you to define how the columns and tables that you have created in the Tables pane are displayed in the Report Station and Patient Administration modules. It also enables you to define an identifier column and value format for each table.

Selecting Objects

Select the object (patient, order, examination or image) for which you want to define columns from the **Object** list. How the objects are listed depends on how your SpeechQ system has been set up.

If you have an HIS or RIS interface, objects are listed as:

- PTN

- ORD

- EXM

- IMG

If you have a stand-alone system, objects are listed as:

- R_PTN

- R_ORD

- R_EXM

- IMG

Selecting Levels

Once you have selected the object, you must now select the level:

Level	Description
Table	Enables you to define an identifier column and value format for the object you have chosen, and set the Desktop Identifier.
Column	Enables you to define the column properties for the object you have chosen.

Defining Identifier Columns

Selecting **Table** from the **Level** list enables you to define identifier columns and value formats for patients, examinations, orders and images.

Identifier columns contain values that are unique in your SpeechQ system. This means that no two entries can have the same values for these columns. Identifier columns enable you to distinguish, for example, between patients with the same name or with the same address (For example, members of the same family), or between examinations on the same modality and on the same day. They can be configured for patients, orders, examinations and images.

✎ The Identifier columns that you choose to define for orders and examinations will determine the values that are displayed in the **Order** and **Examination** fields of the report properties in the Report Station module, as well as in the Worklist Management pane of the Workflow Administration module.

To define an identifier column, do the following:

1. Click **Metadata** on the Actions bar.

2. Select the object for whose table you want to define an identifier column, from the **Object** list.

3. Select **Table** from the **Level** list.

4. Click the **Identifier** field. A list of available columns is displayed. These correspond to the columns defined for this Object.

5. Select the column you want to define as the identifier column.

6. Click **Apply** to save your changes.

7. Click **Cancel** to discard your changes.

Defining Value Formats

Selecting **Table** from the **Level** list enables you to define identifier columns and value formats for patients, examinations, orders and images.

The value format is the label given to each patient, order, examination and image in SpeechQ, which is used when these objects appear in the Report Station or Patient Administration modules as a single property field in a table (such as the Patient field of the Report Properties table).

You define the value format using the column properties of the object in question; it can be a single property or a combination of properties. For example, while you might want to refer to an image simply by its ID code, you may prefer patients to be known by their first and last names.

Value formats must be defined using the convention: {*PTN_Example*}, where '*PTN_Example*' is the value contained in one of the Column_name fields. Punctuation can be used where more than one value is used.

To define a value format, do the following:

1. Click **Metadata** on the Actions bar.

2. From the **Object** list, select the object for whose table you want to define a value format.

3. Select **Table** from the **Level** list.

4. Click the **Value Format** field. The cursor appears in the text box.

5. Define the value format. For example, the patient value format 'Last name, First name' is defined as:

{PTN_Last name}, {PTN_First name}

♻ This a patient called 'Margaret Stewart' will be displayed in the corresponding property field as: Stewart, Margaret**.**

6. Click **Apply** to save your changes, or click **Cancel** to discard your changes.

Integrating SpeechQ with Desktop Applications

Desktop Integration is the process whereby SpeechQ Report Station is linked to other desktop applications with which it must communicate (For example, a RIS client or a PACS client). This is achieved by programatically linking the applications via SpeechQ's Desktop Integration SDK. Desktop Identifiers are set for patients, orders and examinations, specifying the columns in which to look up values which are referenced via the Desktop Integration SDK methods. This means that actions initiated in an application other than SpeechQ will automatically furnish SpeechQ with the relevant patient, order or examination information.

For example, an author views a study on a PACS and uses a PACS function to create a new report. If the Desktop Identifiers have been correctly set, SpeechQ will recognize the order which contains the study and assign it to the report automatically, sparing the author the need to assign it themselves at a later time.

To define a Desktop Identifier, do the following:

1. Click **Metadata** on the Actions bar.

2. Select the object for whose table you want to define an identifier column, from the **Object** list.

3. Select **Table** from the **Level** list.

4. Click the **DesktopId Column** field. A list of available columns is displayed. These correspond to the columns defined for this Object, see: Adding and removing columns.

5. Select the column you want to define as the Desktop Identifier.

6. Click **Apply** to save your changes.

7. Click **Cancel** to discard your changes.

Understanding Column Properties

The columns displayed in the Metadata pane have the following properties:

Column	Description
Column name	This is the SpeechQ system name for the column, as entered by the Data Definition Administrator in the Tables pane.
Caption	Enter the name of the column as you want it to appear in the Report Station and Patient Administration modules.

Column	Description
Display type	Select an option from the list to define the way in which the user will see the information in this column. Available display types include: • **(normal)** - The data will not be formatted in any way. • **Filter Last name** - This assigns the column to the 'search by last name' function in the Patients list view of the Report Station and Patient Administration modules. If you do not define one column in this way, the **Last name** field will not be displayed in the Patients list view. • **Barcode** - This defines the column as a barcode. You must define one column in this way for this function to be active. • **Modality** - You can associate specific work types with the modalities in this list, and therefore assign a work type to an order or examination through the modality. • **Date** - The data will be displayed in the date format: dd/mm/yy, according to the regional settings of your PC. • **DateTime** - The data will be displayed in the date/time format: dd/mm/yy, hh:mm, according to the regional settings of your PC. • **Pop-up** - The column has been associated with a Lookup table, which is displayed as a pop-up box. • **Drop-down** - The column has been associated with a Lookup table, which is displayed as a drop-down list. ✍ Which options are displayed will depend on the Type entered by the Data Definition Administrator in the Tables pane.

Column	Description
Lookup table	If you have defined a Lookup table for this column in the Tables pane, the name of the associated Lookup table is displayed here.
Mandatory	Select this option if you want the column entry to be mandatory. This property affects only the Patient Administration module.
Hidden	Select this option if you want the column to be hidden. This property affects only both the Patient Administration and Report Station modules.
Default Visible Position	This is where the column will appear in the table (numbered from the left). Users can change the order in their own workstation using drag-and-drop.
Barcode Prefix Length	This is used to truncate the first x characters of a barcode, where x corresponds to the value entered here. ⟳ The number of characters displayed at the end of the barcode will also depend on the size defined for this field.
Code runner value	This displays the XML tag which will be used in the coding process for this column.
Part of primary key	This is only available if the SpeechQ system has been set up to interface with a HIS/RIS, and enables you to enter a unique key for this column.
XMLPath Inbound	This is only available if the SpeechQ system has been set up to interface with a HIS/RIS, and enables you to enter an XPath expression which identifies the XML node(s) to map to this column.

Column	Description
XMLMultiplicity	This is only available if the SpeechQ system has been set up to interface with a HIS/RIS. This setting applies only to the examination table. It enables you to define whether the XML Path Inbound XPath expression results in multiple values, for which multiple records need to be generated. This is especially important to allow multiple examinations within an For example, InsertOrder transaction. All entries which appear multiple times in the XML need to be flagged with this attribute. Furthermore, one of the entries needs to be flagged as XMLLoopNode. The other entries need relative paths in the XML Path inbound (For example, "../ZRR.4" or "*parent::*/ZRR.4*"=).
XMLLoopNode	This is only available if the SpeechQ system has been set up to interface with a HIS/RIS. This setting applies only to the examination table. It enables you to specify one of the nodes flagged with XML multiplicity as the one used for looping through in the XSLT "for-each" statement.
XMLPosition	This is only available if the SpeechQ system has been set up to interface with a HIS/RIS. It enables you to specify the position/index of multiple values fetched via the XML Path Inbound XPath expression. For example, Position = 2 takes the second NextOfKin of //NK1.2/XPN.1 (Patient Next Of Kin Family Name).

Defining Column Properties

Once you have created columns in the **Table** pane, you can view and define their properties in the **Metadata** pane.

To view or define the properties of a column, do the following:

1. Click **Metadata** on the Actions bar.

2. Select the object for whose table you want to define columns properties, from the **Object** list.

3. Select **Columns** from the **Level** list. The columns for the table of the selected object are displayed.

4. Make the relevant changes to the column properties.

5. Click **Apply** to save your changes, or click **Cancel** to discard your changes.

Topic:
Selecting Columns

The Table pane enables you to create your own columns for the tables that display information relating to patients, orders, examinations and images in the SpeechQ system.

The Data Definition Tool comes with certain default columns already assigned to the tables for each object. They appear grayed-out and cannot be deleted. The Table pane provides functionality for adding columns to these tables, as well as deleting columns that you no longer need.

Once you have created a column, you can define its properties in the Metadata pane.

The Table pane contains the following items:

Item	Description
Object	Select the object for whose table you want to define columns, from the drop-down list.

Item	Description
Columns table	The columns table displays all the columns currently in the selected table, with the following information: • **Column name** - Enter the SpeechQ name of the column here. This is not the caption, which is the name that will appear in the end-user modules, though the value can be the same. • **Type** - Select an option from this list to determine the way in which information is entered in the table. Apart from Lookup, these are all standard Microsoft SQL server data types. The data types we recommend are: **nvarchar**, **int** and **smalldatetime**, although others are also supported. • **Length** - If you have selected a **..char** data type in the **Type** field, enter here the maximum number of characters allowed in the column entry. • **Lookup** - If you have selected **Lookup** in the **Type** field, the Lookup tables defined by you in the Lookup pane are displayed here. Select the Lookup table you want to associate with this column from the drop-down list. • **Column ID** - This is the internal SpeechQ ID code for this column in this table.
Add	Adds a new column entry to the table.
Delete	Deletes the column(s) you have selected.

Default Columns

SpeechQ displays the following default columns, which cannot be deleted:

Column	Description
Patients	- **ID**—The patient ID code, supplied by SpeechQ. - **Creation Date**—The date the patient was first entered in the SpeechQ system. - **Deletion Date**—The date the patient was deleted from the SpeechQ system.
Orders	- **ID**—The order ID code, supplied by SpeechQ. - **Creation Date**—The date the order was first entered in the SpeechQ system. - **Deletion Date**—The date the order was deleted from the SpeechQ system. - **R_PTN_ID**—The ID of the patient associated with the order. - **IMG_ID**—The ID of the image associated with the order.
Examinations	- **ID**—The examination ID code, supplied by SpeechQ. - **Creation Date**—The date the examination was first entered in the SpeechQ system. - **Deletion Date**—The date the examination was deleted from the SpeechQ system. - **R_ORD_ID**—The ID of the order associated with the examination.

Adding and Deleting Columns

Adding columns

To add a column to a patient, order, examination or image table, do the following:

1. Click **Table** on the Actions bar.

2. Select an object from the **Object** list. The table for that object is displayed.

3. Click **Add**. A new, empty column entry is added to the table.

4. Name the column and enter the column information.

5. Click **Apply** to add the column to the table. SpeechQ automatically assigns it the next free Column ID number.

✏ Click **Cancel** to delete the column at any time during the creation process.

Editing Columns

After you create a column, you cannon t modify it. If you want to change the way you have defined a column, you must delete the column and then create another column. You can now give the new column the same name, and define it how you want.

✏ If a column is attached to an index it cannot be deleted. You must first detach the column from the index, delete it, create a new column and then reattach the modified column to the index.

☠ When you delete a column, all the information entered in that column will be lost, and will not be transferred to a new column with the same name. You will have to re-enter the information manually in a new column.

Deleting Columns

To delete a column from a patient, order, examination or image table, do the following:

1. Click **Table** on the Actions bar.

2. Select an object from the **Object** list. The table for that object is displayed.

3. Click to the left of a column entry to select it. The entire column entry will be highlighted - if only one field is blue, the column cannot be deleted. To make multiple selections, press CTRL on your keyboard and select each column you want to delete.

4. Click **Delete** to delete the column from the table. You will be asked to confirm your action.

  ☞ The default columns for each object are unavailable and cannot be deleted.

Topic:
Using Quick Filters

Quick filters make searching for orders, examinations and patients faster and more efficient. The search criteria you define here appear as individual filters above the list in the Orders and Patients List views of the Report Station module. These enable users to display items with common properties, for example all examinations taken by the same modality, or simply to reduce the number of items in the list.

Quick filters are displayed from left to right in the order in which they appear in the Quick Filter Nr. list. Depending on the size of the user's screen and whether they have the **Actions** and **Command Explorer** bars open, the quick filters may display on more than one line.

Using Quick Filters in the Orders List View

The Orders List has two standard quick filters: **Date** and **Search for**. These filter the orders and examinations by when they were created and whether or not they have reports associated with them. These two filters appear by default unless disabled by the System Administrator (set values to `0` for `EnableDateFilter` and `EnableReportStatusFilter` in the WorkflowEngine.exe.ini). In addition to these two, a further six filters can be defined by you here. Two filters, for Order ID and Examination ID, have already been created by default when you first log on to the Data Definition Tool, but these can be modified at any time.

Using Quick Filters in the Patients List View

The Patients List has no standard quick filters and one default quick filter, Patient ID. You can also modify this quick filter and define up to five more.

The Quick Filters pane contains the following items:

Item	Description
Object	Select the List view for which you want to define quick filters: • **Order / Exam**—Select this option to define quick filters for orders and examinations in the Orders List view. • **Patients**—Select this option to define quick filters for patients in the Patients List view.
Quick Filter Nr.	This lists the number of available quick filters, and the order in which they are displayed.
Column	Here you select the columns you want to define as quick filters The list of available columns corresponds to the columns already created for the object in the Table pane. In this list the column name is displayed, as opposed to the column's caption, which is what will be displayed in the corresponding List view of the Report Station.

Defining Quick Filters

To define a quick filter, do the following:

1. In the Quick Filters pane, select the **Object** for which you want to define a quick filter.

2. In the Columns column, place the cursor over the first free field. A down arrow is displayed to the right, indicating a drop-down box.

3. Click the down arrow to reveal the columns available for quick filters.

4. Select the column you want to define as a quick filter. Repeat the above steps until you have defined all the quick filters you want.

5. Click **Apply**.

⌂ To remove a quick filter, open the drop-down list and select the uppermost (empty) field and click **Apply**.

Topic:
Creating and Deleting Indices

Similar to most commercial relational database management systems, you can configure SpeechQ to use indices when searching columns for data. By defining some of the more common search criteria as part of an index, you can significantly improve the speed and efficiency of your SpeechQ application.

Using a Single Column in an Index

When a column is used for indexing, the SpeechQ database can search for table entries very fast, based on the values in this column.

For example, it is common to search for orders by supplying an accession number. In this case, it is recommended that you configure the column storing the accession number as an index.

Using a Group of Columns in an Index

On the other hand, it is common to search for a patient by their surname and first name. In this case, it is recommended that you configure an index based on the column pair <'first name' and 'last name'>. This is an example of an index based on a group of columns.

The entries in the columns of an index are not necessarily unique. The SpeechQ database only stores extra information to make searching very fast.

Using Unique Constraints

You can also inform SpeechQ that no two table entries should have the same value in a particular column or group of columns. This is done by configuring a unique constraint.

For example you could configure SpeechQ so that no two patients are allowed to have the same medical insurance number.

Another example is that no two orders can have the same placer order number.

A further example is that no two patients are allowed to have the same combination of first name, last name and name prefix. So having two patients with the names <Sammy Davis> and <Sammy Davis> is not permitted, but having patients with the names <Sammy Davis Sr.> and <Sammy Davis Jr.> is allowed.

Defining Indices Using the Index Pane

The Index pane enables you to define indices using the following items:

Item	Description
Object	Lists the objects (patients, orders, examinations and images) for whose tables you can define Indices.
Add Index	Creates a new index for the selected object. Indices are displayed in the Index pane with the following information: • **Index name**—The name of the index as entered by the Data Definition Administrator. • **Unique**—Denotes whether the index has a unique constraint or not.

Item	Description
Add Column	Enables you to define the column(s) you want to configure for the selected index. Columns are displayed in the Index pane with the following information: • **Column name**—This is the name of the column as defined by the Data Definition Administrator in the Table pane. • **Order**—If there is more than one column in the index, this is the order in which SpeechQ will search the columns. • **Descending**—Select this option if you want SpeechQ to search the columns in descending order. ☞ You should activate this option in most cases, since users will expect lists to be ordered with the most recent entry first.
Delete	Removes columns from Indices and removes Indices from the SpeechQ system.

Creating and Deleting Indices

To create an index, do the following:

1. Select the object for whose columns you want to define Indices, from the **Object** list.

2. Click **Add Index.** A new index is displayed with the default name *IX_PTN_n+1* where *PTN* is the **Object** list selection and *n* is the number of Indices already created in your SpeechQ system.

3. Assign a name to the new index a name and select **Unique** if you want to assign it unique constraints.

4. Click to the left of the index entry to select it and click **Add Column** (you can add more than one column at a time). A new column entry is displayed, associated with the selected index.

5. Define the column(s) for the index.

6. Click **Apply** to save your changes.

✐ You can click **Cancel** to delete the index at any time during the creation process.

✐ When selecting an index entry in order to add a column, the entire entry must be highlighted for this process to work.

Deleting an Index

Click to the left of an index entry to select it; click **Delete** to remove the index from the SpeechQ system. You can make multiple selections by pressing the **Ctrl** key and clicking on any columns you want to delete.

Adding and Removing Index Columns

Deciding which column to assign to an index is crucial to the performance of that index.

When a column is used for indexing, the SpeechQ database can search for table entries very quickly, based on the values in this column. For example, if the most common way to search for orders is via their order ID code, then it is recommended that you configure that column as an index.

Adding Columns to an Index

To add one or more columns to an index, do the following:

1. Select the object for whose columns you want to define indices, from the **Object** list.

2. Click **Add Index** to create a new index. Alternatively, click to the left of an existing index to select it.

    ⚲ The entire index entry must be highlighted before you can add a column.

3. Click **Add Column** (you can add more than one at a time). A new column entry is displayed, associated with the selected index.

4. From the **Column name** list, select the column you want to define.

5. In the **Order** field, assign the column a number.

6. Select **Descending** if you want the search order to be reversed.

7. Click **Apply** to save your changes, or click **Cancel** to discard your changes.

Removing Columns from an Index

Click to the left of a column entry to select it and click **Delete** to remove the column from the index with which it is associated. You can make multiple selections by pressing the **Ctrl** key and clicking on any columns you want to remove.

Removing columns from an index does not remove them from the SpeechQ system.

Topic:
Using Lookup Tables

Lookup tables are predefined sets of values for certain column entries. By linking a column to a Lookup table, you restrict the number of entries possible in that column, thereby saving time for the administrator and reducing the possibilities for error.

In the Data Definition Tool, you can define Lookup tables and their values, and assign them to columns in the patient, order, examination and image properties fields. These are then displayed in the Patient Administration modules according to the display type you have selected. Typical examples of columns where Lookup lists would be suitable are Gender, where the choice is either 'male' or 'female', or Modality, where the list gives all the available radiography machines in your hospital.

✎ The Lookup table functionality is only available when SpeechQ is set up to be used with the SpeechQ Patient Administration module, and not with an interface to a HIS/RIS.

The Lookup pane enables you to create, define and delete Lookup tables by providing the following fields and buttons:

Field/Button	Description
Name	Lists all the Lookup tables currently in your SpeechQ system.
Add	Opens the New Lookup Table dialog box.
Delete	Deletes the Lookup table displayed in the Name list.
Delete Unreferenced Tables	Deletes any Lookup tables that are not currently in use in SpeechQ (i.e. not assigned to a column).
ID	This is the Lookup table value ID, defined by SpeechQ.

Field/Button	Description
Value	This is the Lookup table value as it will appear in the end-used module drop-down list.
Add	Opens a new value entry for the table, enabling to you add a value to the table.
Delete	Deletes the value you have selected.

Creating and Deleting Lookup Tables

Creating Lookup Tables

To create a new lookup table, do the following:

1. Click **Lookup** on the Actions bar. The Lookup pane is displayed.

2. Click **Add**. The New Lookup Table dialog box is displayed.

3. Enter the name for the lookup table you want to create. The name must use the convention: *R_L_lookupname*.

4. Click **OK**. The lookup table is displayed in the Name list; you can now add values to it.

Deleting Lookup Tables

To delete a lookup table, do the following:

1. Click **Lookup** on the Actions bar. The Lookup pane displays.

2. Select the Lookup table you want to delete in the **Name** list.

3. Click **Delete**. You will be asked to confirm your action. The selected Lookup table is deleted.

Deleting Unreferenced Lookup Tables

A Lookup table which exists in SpeechQ but is not assigned to a column is designated an 'unreferenced Lookup table'.

To purge these unreferenced lookup tables from your system, do the following:

1. Click **Lookup** on the Actions bar.

2. Click **Delete Unreferenced Lookup Tables**. A dialog box is displayed listing all unreferenced Lookup tables and asking you to confirm your action.

3. Click **Yes**. All unreferenced Lookup tables will now be removed from the SpeechQ system.

Adding Values to Lookup Tables

Once you have created a Lookup table, you will need to add values to it.

Adding values to Lookup tables

To add values to a Lookup table, do the following:

1. Click **Lookup** on the Actions bar.

2. Select the required Lookup table from the **Name** list. The Lookup table is displayed with the following information:

Field	Description
ID	This is the Lookup table value ID, defined by SpeechQ.
Value	This is the Lookup table value as it will appear in the end-used module drop-down list.

3. Click **Add** to add a new lookup table entry.

4. Enter the lookup table entry the value you want; the **ID** is filled in automatically.

5. Repeat steps 3 and 4 until all the required Lookup table values have been entered.

6. Click **Apply** to save your changes, or click **Cancel** to discard your changes.

Editing and Deleting Values from Lookup Tables

To edit or delete a lookup table value, do the following:

1. Click **Lookup** on the Actions bar.

2. Select the required Lookup table from the **Name** list. The Lookup table values are displayed.

3. To change a value, put the cursor in the value entry field and make your changes, then click **Apply**.

🔔 To delete the value, click to the left of the value entry (the whole entry will be highlighted) and click **Delete**.

Topic:
Adding and Deleting Images

An Image is a picture resulting from a radiological examination of a patient, and may take one of several forms, depending on the modality (machine) with which it was taken. Different Images require different report document templates, known as work types.

In the Report Station module, if a report is created with an image already associated with it, the relevant work type is automatically assigned to it. Configuration of the mapping between Image types and work types is done via the Workflow Administration module. An Image may have more than one work type assigned to it, in which case the user is presented with a drop-down list.

The Image pane of the Data Definition Tool enables the Administrator to enter the names and descriptions of the Images that will appear in the Workflow Administration module.

Adding and Deleting Images

Adding Images

To add an image to the SpeechQ system, do the following:

1. Click **Image** on the Actions bar.

2. Click **Add**. A new Image entry is displayed.

3. Give the Image a name and description. The ID code is automatically assigned by SpeechQ.

4. Click **Apply** to save your changes. The Image is now in the SpeechQ system.

Deleting Images

To delete an Image from the SpeechQ system, do the following:

1. Click to the left of the Image entry to select it. The whole row will be highlighted in blue.

2. Click **Delete** (you will be asked to confirm your action).

3. Click **Apply** to save your changes. The Image no longer exists in SpeechQ.

Topic:
Saving and Loading Configurations

The Configuration Pane

The Configuration pane enables you to save and load data configurations that you have defined using the Data Definition Tool, by providing the following controls:

- Load

- Reset

- Save

- Generate

Loading Configurations

Click **Load** to browse for and import a data configuration which has previously been saved to a file. This is a two-part process. First, a reset is performed (see below). Then, the saved data configuration is loaded.

Saving Configurations

Click **Save** to save your current data configuration to a file. This saves all the settings that you have made in the Data Definition Tool. It will not save any specific patient, order or examination data.

✎ Settings that are made outside the Data Definition Tool, for example the image/worktype connections that are defined in the Workflow Administration module, are not saved.

Resetting Configurations

Click **Reset** to delete all the information that has been entered in the Data Definition Tool since it was installed. You will be left with only the default columns and the default image. Existing patient, order and examination data will appear in these columns, irrespective of how your system is set up.

☠ Loading or resetting data configurations is not recommended for a working SpeechQ system, due to the large information loss involved. This function is designed primarily to help administrators test different data configurations and find the one that best suits their hospital or clinic.

Generating XML samples for Transformation and Validation

Click **Generate** to create XML files which can then be used to transform and validate the XML data you feed into SpeechLink and check that it contains no unworkable inconsistencies.

Saving and Loading Configurations

This functionality is designed to enable administrators to test various different SpeechQ data configurations before finally choosing the one which best suits their working environment. This is done in the Configuration pane.

It is strongly advised that this process is conducted before any patient, order or examination information is entered in the system, as the reset function deletes all such information as well as the data configuration itself.

☠ This is true for both stand-alone installations and those connected to a HIS/RIS. A reset affects data in the SpeechQ database and in a RIS database. Make sure you back up any existing database before you start working with the Configuration pane.

Validating Configurations

Once you have finished a data configuration, you can generate three files, an .xsd and an .xslt for inbound data and an _out.xsd for outbound data. You can use the XSL Transformation (.xslt) to transform the incoming XML data so it adheres to the Data Specification contained in the XML Schema (.xsd) for validation. You must use the _out.xsd XML schema for generating the SLReport.xslt which SpeechLink uses to transform all available data for delivery to the target format you consume.

To generate these files, click **Generate**. This creates the .xsd and .xslt files and displays the **Save Validation Schema** dialog box. You can now save these files to a suitable location and use them to transform and validate your configuration or generate your SLReport.xslt.

Topic:
Configuring XML

The XML Configuration Pane

The XML Configuration Pane enables you to configure custom parent nodes for the data segments of transactions which have a dedicated other segment (OtherOrder, MoveOrders, OtherPatient ...). This is a technical requirement for the automated generation of the SLInbound.XSLT.

If there is no defined custom parent node, XSLT generation works positional, whereby it cannot validate that required nodes are provided in the transactions.

For example, if an entry appears only in the dedicated other segment, but would be needed in both segments, the one available entry would be used for both segments. The problem only occurs if the one in the data segment is missing. If the one in the dedicated other segment is missing it is already picked up by the XSD.

Topic:
Configuring SpeechLink

SpeechLink is an interface module that provides a means for the exchange of information between a Healthcare Information System (HIS/RIS) and SpeechQ.

It enables SpeechQ to incorporate patient, order and examination information sent from a HIS/RIS, and enables report content to be sent from SpeechQ to a HIS/RIS for storage. Furthermore, it is possible to query for patient, order and examination data as well as reports.

SpeechLink accepts XML-structured information which tells it what to update in the patient, order and examination tables. It also generates XML information, representing the reports it delivers back to a HIS/RIS. The XML content is configured in the SpeechQ Data Definition Tool.

Although SpeechLink is very generic, there are constraints on the XML data that it will accept. What it will accept is defined in the SpeechQ Database using the Data Definition Tool.

Essentially, the XML tags should correspond to columns defined in the Metadata pane of the Data Definition application.

The figure below shows, for a typical configuration, the information flow between SpeechQ modules and a HIS/RIS.

⟁ SpeechQ is intended for use in a healthcare environment where information interchange is via XML-structured HL7, and the information of interest is in the ADT, ORM, ORU and QRY HL7 messages. SpeechQ however does not directly communicate using or understand HL7 messaging entities. Because SpeechLink communicates using an XML framework and allows the configuration of the content of the XML, it can be used for communication with other information systems where HL7 is not the standard, but XML-structured data is available.

Configuring and Starting SpeechLink

During installation, SpeechQ will ask you to choose whether you want to set it up with interfacing to a HIS or RIS. This section is only relevant if you choose to interface with a HIS/RIS.

You cannot use both the SpeechLink for directly interfacing with a HIS/RIS and the SpeechQ Patient Administration application. This would lead to an inconsistent and unusable system.

☠ The decision you make cannot be reversed subsequent to installation.

SpeechLink is configured using an XML file. This XML file is called SpeechLink.Configuration.xml and should be in the same folder as the executable file of the SpeechLink Windows Service which is installed in the SpeechQ Server Service directory.

SpeechLink Configuration Tags

SpeechLink is configured using an XML file. This XML file should be in the same folder as the executable file of SpeechLink.

The XML file name is SpeechLink.Configuration.xml

It contains all the tags that you need in order to be able to configure SpeechQ to interface with a HIS/RIS. Some tags should be adapted to suit your installation, others are used internally and should be left unchanged. Below is a list of the XML tags; click on a tag to read its function and any remarks regarding configuration.

The following table contains common SpeechLink configuration tags:

Configuration Tag	Description
TCPServer\LocalEndpoint	This entry (IP) defines which network card SpeechLink uses to listen to incoming messages. Leave empty to allow all adapters or if there is only one adapter in the box.
TCPServer\Port	The port SpeechLink listens on.
TCPServer\AllowedClients	You can have multiple AllowedClient tags here, each of which defines where SpeechLink accepts connection from.
TCPServer\MessageStartBlock	The start block of each incoming message in hexadecimal format, comma-separated (For example, 41 denotes a character 'A').
TCPServer\MessageEndBlock	The end block of each incoming message in hexadecimal format, comma-separated (For example, 41 denotes a character 'A').
TCPServer\MessageEncodingClass	This is the class to use for decoding the message content. Default is ASCII but other .NET supported encodings could also be used.

Configuration Tag	Description
TCPServer\MessageTimeout	This is the time SpeechLink waits for the end block to appear after the TCP connection has been established, which means that the transfer of the message cannot take longer than this time period.
TCPServer\RejectAssignedOrderDeletion	This rejects delete transactions if the patient or order to be deleted has an active report assigned to it.
Delivery\ServerPort	This is the port SpeechLink uses to listen to delivery messages from SpeechQ. The same port must be configured in SpeechQ for delivery.
Query\Server	This is the host address of SpeechQ server. SpeechLink connects to this host for querying report data.
Query\Port	This is the port where SpeechQ listens to ReportQuery messages.
TCPClient\RemoteHost	This is the host where reports are delivered to.
TCPClient\RemotePort	This is the port on the host defined above where reports are delivered to.
TCPClient\LocalEndpoint	This entry defines which network card SpeechLink uses to deliver messages. Leave this empty to allow all adapters or if there is only one adapter in the box.
TCPClient\LocalPort	Local outgoing port (optional). If missing or zero, this is automatically assigned.

Configuration Tag	Description
TCPClient\MessageEncodingClass	This is the class to use for encoding the delivery message content. Default is ASCII but other .NET supported encodings could also be used.
TCPClient\MessageStartBlock	The start block of each outgoing delivery message in hexadecimal format, comma-separated (For example, 41 denotes a character 'A').
TCPClient\MessageEndBlock	The end block of each outgoing delivery message in hexadecimal format, comma-separated (For example, 41 denotes a character 'A').
TCPClient\MessageTimeout	Waiting for ACK or NAK after message delivered.
Response\ACK	The location (relative or full path) of the binary file that contains the ACK message sent out from SpeechLink.
Response\NAK	The location (relative or full path) of the binary file that contains the NAK message sent out from SpeechLink.
Trace\IncomingStream	Tracing the raw incoming message (true/false).
Trace\IncomingMessage	Tracing the incoming message after stripping off the start and end block (true/false).
Trace\IncomingTransformation	Tracing the incoming message after applying the XSLT transformation (true/false).

Configuration Tag	Description
Trace\QueryDataQueryFilterSource	Tracing incoming QueryDataQueryFilterSource messages (true/false).
Trace\QueryReportQueryFilterSource	Tracing incoming QueryReportQueryFilterSource messages (true/false).
Trace\Response	Tracing the response sent out (true/false).
Trace\InError	Putting erroneous incoming messages into the special error folder (true/false).
Trace\DeliveryOriginal	Tracing the outgoing delivery message before applying the outgoing transformation and before adding the start and end block (true/false).
Trace\DeliveryTransformed	Tracing the outgoing delivery message after applying the outgoing transformation and before adding the start and end block (true/false).
Trace\DeliveryMessage	Tracing the outgoing delivery message after applying the outgoing transformation and after adding the start and end block (true/false).
Trace\DeliveryError	Putting erroneous outgoing messages into the special error folder (true/false).
Trace\DeliveryCompleted	Tracing the successfully delivered outgoing message.
Trace\Eventlog	Turn Eventlog on/off: 1 or 0.

Configuration Tag	Description
Transformations\InboundMessage	The path of the XSLT file for incoming transformation, default: SLInbound.XSLT, auto-generated XSLT at startup. Clear the setting to use no transformation at all or to specify an own XSLT.
Transformations\ReportDelivery	The path of the XSLT file for outgoing transformation, default: empty.

Tuning the Database

Given the large amount of data which the SpeechQ database might be expected to store, it is highly recommended that you optimize the database configuration so that data entry does not take too long.

This can be done by defining indices for the patient, order and examination tables in the database, which will enable SpeechLink to sort and archive the incoming data more efficiently.

The two rules for creating the indices:

- Fields to include—fields marked as Part of primary key for the given table in the Data Definition Tool.

- Order of the fields—the same as they appear in the inbound XML.

- If these indices are created in the sample database they can be saved together with the sample configuration.

Topic:
Configuring Interfaces

Basic Information About File-based Interfaces

SpeechLink from version 1.1 on does not support file-based communication.

The test application SpeechLinkTest.exe allows you to select specific XML files (For example, the ones supplied along with the Sample configuration) or to generate a huge amount of XML test data for large scale tests and to feed these XML files via a TCP socket connection into SpeechLink. It also allows you to monitor ACK, NAK and the Delivered Reports or Query Results.

Basic Information About Port-based Interfaces

SpeechLink accepts requests to insert, update, delete and query patient, order and examination information as well as to merge patient information, move orders and query report data, which are submitted as text messages sent to a pre-configured TCP/IP port. The text should be in the XML format.

SpeechLink listens at a pre-configured port. The sender of messages to this port should connect to the port, send a message, wait for an acknowledgement from SpeechLink and then close the connection.

Each message has a StartBlock and EndBlock byte sequence.

If SpeechLink can successfully process the message, it will return an acknowledgement (configurable in the file ack.bin). If SpeechLink fails for whatever reason, it will return a not acknowledged (configurable in the file nak.bin).

✍ ACK, NAK, Start- and EndBlock default settings need to be configured to resemble the requirements of the interface engine used.

Configure the following tags to enable TCP/IP based communication:

- TCPServer\LocalEndpoint

- TCPServer\Port

- TCPServer\AllowedClients

- TCPServer\MessageStartBlock

- TCPServer\MessageEndBlock

- TCPServer\MessageEncodingClass

- TCPServer\MessageTimeout

- Delivery\ServerPort

- Query\Server

- Query\Port

- TCPClient\RemoteHost

- TCPClient\RemotePort

- TCPClient\LocalEndpoint

- TCPClient\LocalPort

- TCPClient\MessageEncodingClass

- TCPClient\MessageStartBlock

- TCPClient\MessageEndBlock

- TCPClient\MessageTimeout

- Response\ACK

- Response\NAK

   📖 For more information, see *SpeechLink Configuration Tags*.

Topic:
Defining Message Content

Defining Conformant Input XML Content
XML Message Rules

SpeechLink imposes the following XML message rules:

- SpeechLink accepts XML messages with elements which correspond to table columns.

- Element attributes are not used.

- There is no restriction on the XML element tree depth (DOM) allowed in the XML messages.

- SpeechLink maps an element onto a table column, dependent on the XPath expression specified in XML Path Inbound.

Example: Representing HL7 Segments

The mapping of XML elements to database tables and columns is best shown with the example in the figure below. It shows a fragment of an XML message on the right-hand-side, with the transaction requesting the insertion of an order. Here the patient information sent in this transaction is mapped.

You will notice how the XML elements map onto table columns and how the mapping is specified by the XML Path Inbound of a table column.

Defining Sequences

For generating multiple exams, note that you need to flag the columns with XML multiplicity and set one of them as XMLLoopNode. Furthermore, you need to specify a relative XPath in the entries not flagged as XMLLoopNode.For mapping specific instances of multiple entries, you can use the XMLPosition attribute to specify which instance (for example, "2" would mean the second instance) should be mapped to a given column.

```
…
    <ZRR>
        <ZRR.1>01</ZRR.1>
        <ZRR.4>FNA DEEP TISSUE UNDER RAD GUIDE
                88171</ZRR.4>
    </ZRR>
    <ZRR>
        <ZRR.1>02</ZRR.1>
        <ZRR.4>NEEDLE BIOPSY ABD/RETROITONEAL
                49180</ZRR.4>
    </ZRR>
…
```

Enforcing Uniqueness

By specifying a column as unique index ("Part of primary key" in the picture below), you can make sure that no duplicate entries with the same value in these columns will be created.

In the example below it is not possible to create two patients with the same Patient Identifier. The transaction 'Insert Patient' will fail, if there is already a patient in the database with the given identifier.

Defining Output XML Content

SpeechLink utilizes the XSLT defined in the Transformations\ReportDelivery configuration tag to transform all available data for delivery to the target format.

You can use the _out.xsd and your XML Schema as input for a XML tool to generate the Report transformation (.xslt) you need.

EventLogs and Logfiles

SpeechLink (as a Windows service) does not support User Interface feedback. However, you can enable Event-Logging using the \Trace\Eventlog configuration setting in the SpeechLink.Configuration.xml to obtain error information in the Windows EventLog.

By enabling following trace options, inbound and outgoing messages can be dumped at various stages during processing into different folders.

SpeechLink.Configuration.xml

=Option	Sequence	Configuration Tag	Trace File Name	Content	Format
Data transaction (InsertPatient, InsertOrder, …)	1	<IncomingStream>	IncomingStream\I_<id>_<datetime>.dump	Raw incoming data	Binary
	2	<IncomingMessage>	IncomingMessage\M_<id>_A_<datetime>.dump	Original incoming message	XML
	3	<IncomingTransformation>	IncomingMessage\M_<id>_B_<datetime>.dump	Transformed incoming message	XML
	4	<Response>	IncomingMessage\M_<id>_E_<datetime>.dump	Message response	Binary
	in case of error	<InError>	InError\M_<id>_ERROR_<datetime>.dump	Original incoming message	XML
			InError\M_<id>_ERROR_<datetime>.txt	Exception text	
QueryData	1	<IncomingStream>	IncomingStream\I_<id>_<datetime>.dump	Raw incoming data	Binary
	2	<IncomingMessage>	IncomingMessage\M_<id>_A_<datetime>.dump	Original incoming message	XML

=Option	Sequence	Configuration Tag	Trace File Name	Content	Format
	3	<IncomingTransformation>	IncomingMessage\M_<id>_B_<datetime>.dump	Transformed incoming message	XML
	4	<QueryDataQueryFilterSource>	IncomingMessage\M_<id>_C_<datetime>.dump	Response before QueryFilter applied	XML
	5	<Response>	IncomingMessage\M_<id>_E_<datetime>.dump	Message response	Binary
	in case of error	<InError>	InError\M_<id>_ERROR_<datetime>.dump	Original incoming message	XML
			InError\M_<id>_ERROR_<datetime>.txt	Exception text	Text
QueryReport	1	<IncomingStream>	IncomingStream\I_<id>_<datetime>.dump	Raw incoming data	Binary
	2	<IncomingMessage>	IncomingMessage\M_<id>_A_<datetime>.dump	Original incoming message	XML
	3	<IncomingTransformation>	IncomingMessage\M_<id>_B_<datetime>.dump	Transformed incoming message	XML

=Option	Sequence	Configuration Tag	Trace File Name	Content	Format
	4	<QueryReportQueryFilterSource>	IncomingMessage\M_<id>_D_<datetime>.dump	Response before QueryFilter applied	XML
	5	<Response>	IncomingMessage\M_<id>_E_<datetime>.dump	Message response	Binary
	in case of error	<InError>	InError\M_<id>_ERROR_<datetime>.dump	Original incoming message	XML
			InError\M_<id>_ERROR_<datetime>.txt	Exception text	Text
Delivery	1	<DeliveryOriginal>	Delivery\D_<jobId>_A_<datetime>.dump	Job XML as received from SpeechQ	XML
	2	<DeliveryCompleted>	Delivery\D_<jobId>_B_<datetime>.dump	Job XML with a new added root tag	XML
	3	<DeliveryTransformed>	Delivery\D_<jobId>_C_<datetime>.dump	Job XML after outgoing transformation	XML

=Option	Sequence	Configuration Tag	Trace File Name	Content	Format
	4	\<DeliveryMessage\>	Delivery\D_\<jobId\>_D_\<datetime\>.dump	Outgoing message	Binary
	in case of error	\<DeliveryError\>	DeliveryError\D_\<jobId\>_X_\<datetime\>.dump	Job XML as received from SpeechQ	XML
			DeliveryError\D_\<jobId\>_X_\<datetime\>.txt	Exception text	Text

Remarks

- Valid configuration values are 1 or TRUE for true and 0 or FALSE for false.

- <id> in IncomingStream is an internal sequence used for uniquely identify all incoming streams. Each stream gets a new value.

- <id> in all others is an internal sequence used for uniquely identify all incoming messages. Each message gets a new value.

- <jobId> is the ReportId.

- General Tracing functionality can be configured via SpeechLink.Service.exe.ini settings.

Topic:
Working with Transactions

SpeechLink Transactions

SpeechLink provides functionality for the following actions:

- Adding patients

- Updating patient information

- Deleting patient information

- Merging patient information

- Adding orders and examinations

- Updating orders and examinations

- Deleting orders and examinations

- Moving orders and examinations

- Merging orders and examinations

- Filtered update order

- Querying patient, order and examination information

- Querying report information

- Rolling back deletions (updating records)

These are referred to in SpeechLink as transactions. SpeechLink will insert, update and delete as well as merge and query table entries, depending on which transactions are requested, in the form of XML message content.

General Rules for Transactions

If you are working with transactions, please bear the following in mind:

- The transaction identifier (InsertPatient, UpdateOrder, etc.) needs to be provided correctly

- The PTN, ORD, EXM Database Tables should have all the columns defined that you require. You also need to know which unique index is used in these tables.

- Create XML (by configuring a XML creation tool / MIP) so that the XML elements correspond to the entries of the MTD Database Table.

- The XML Path inbound needs to be properly configured.

- Check that the XML element values corresponding to the Database Table columns in unique indices really are unique.

- The strings defined in the XML input must be convertible to the data types specified in the Database Table.

- If XML nodes were used which are not configured in the configuration, they will be ignored.

- When using UPDATE transactions, and you are not sure if the result will be an update or an insert, ensure you provide all the mandatory data. For simple modifications, only the Part of Primary Key must be given.

- There are no transactions explicit on Exam level – you have to use ORDER transactions providing exam related information.

Module 3:
Using the Process Definition Tool

Module Description

This module covers using the Process Definition Tool.

Module Performance Objectives

After completing this module, you will be able to:

- view files and diagrams.

- define SpeechQ workflows.

- create workflow types.

- configure application properties.

- define Datafields.

- define participants.

- define activities.

- define transitions.

Module Prerequisites

To understand the concepts and perform the tasks in this module, you should know how to:

- design workflows.

SpeechQ for Implementation and Support

Topic:
Viewing Files and Diagrams

The SpeechQ Process Definition Tool enables you to create and define workflow types. These can be used by the Workflow Administrator to ensure that your hospital can benefit most efficiently from the many advantages provided by SpeechQ.

Main Window

The Process Definition Tool main window is your central starting point. Its main element is the work area, which is composed of two sections.

XML Tree

On the left of the work area is the XML tree. This displays the subtrees and nodes that comprise the workflow type you are currently working on. Nodes can be created, edited and deleted, enabling you to customize your workflow. Subtrees cannot be deleted; the default subtrees are:

- Process Header

- Applications

- Datafields

- Participants

- Activities

- Transitions

- Viewer

- Archiver

- Exporter

Properties Pane

On the right of the work area is the Properties pane. This displays the properties of the node you have selected in the XML tree, and contains controls for adding, editing and deleting these properties.

In addition to the work area are the following elements, all of which can be manipulated to customize your overall view:

- Menu bar—This provides a list of menu options and commands.

- Toolbar—This provides functions relating to the workflow and working procedure.

Menus

SpeechQ Process Definition Tool provides the following menus:

Menu	Description
File	• **New**—Creates a new workflow type ⟲ This is the default SpeechQ Workflow Type. • **Open**—Opens a workflow type from a saved location. • **Save**—Saves the workflow type that is currently open. • **Save as**—Saves the workflow type that is currently open to a new location, with a new name. • **Validate**—Validates the workflow type that is currently open. • **Close**—Closes the workflow type that is currently open. • **Exit**—Closes the SpeechQ Process Definition Tool.

Menu	Description
Edit	• **Insert**—Enables you to insert the following: **Applications**, **Datafields**, **Participants**, **Activities**, **Transitions**. • **Delete node**—Deletes the selected node. • **Copy node**—Copies the selected node. • **Paste node**—Pastes a node from the clipboard into the workflow type. The node will automatically be pasted in to the correct folder. • **Cut node**—Deletes the selected node and pastes it on the clipboard. • **User Roles**—Enable you to create user roles.
View	• **Show Diagram**—Displays the workflow diagram for the workflow type that is currently open. • **Show XML**—Displays the XML file for the workflow type that is currently open.
Export/Import	• **Export**—Saves a selected subtree or node to an external location. • **Import**—Imports a subtree or node from an external location into the workflow type that is currently open.

Menu	Description
Window	This menu lists all the workflow types that are open in the current session. If you open or create a workflow type without closing the one you had open before, you can return to the earlier one using this menu. The workflow type that is currently open is indicated by a tick next to it. ✎ The name that is show is the name that the workflow type is saved under - this is not necessarily the same as the name or ID. Until you save a workflow type, it will be displayed as *Untitled<NUMBER>*.
Help	• **Contents and Index**—Accesses the Online Help system. • **About**—Displays general version and copyright information.

Toolbars

The Process Definition Tool toolbar contains the following functions:

- **New**—Opens a new default workflow type in the main window.

- **Open**—Opens a saved workflow type from an external location.

- **Save**—Saves the workflow type you are currently working on.

- **Cut**—Deletes the selected node and pastes it on the clipboard.

- **Copy**—Copies the selected node.

- **Paste**—Pastes a node from the clipboard into the workflow type. The node will automatically be pasted in to the correct folder.

- **Validate**—Validates the workflow type that is currently open.

- **Show Diagram**—Displays the workflow diagram for the workflow that is currently open.

- **Sort**—Sort all the nodes in the XML tree into alphabetical order within their respective subtrees.

Special Features

The Process Definition Tool contains certain features designed to help you define workflow types quickly and without error.

Validation

Validation is a process whereby SpeechQ checks the selected workflow type to see if it will function properly in the system. If there are any inconsistencies that will lead to an invalid workflow type, a message is displayed listing the errors.

To validate a workflow type, do the following:

1. Verify that the correct workflow type is currently open.

2. Click **File** > **Validate**. A message is displays whether the workflow type is valid or not.

🔔 You can also click **Validate** on the toolbar.

Viewing the Workflow Diagram

The workflow diagram is a visual representation of a workflow type, showing all the possible routes a report may take within that workflow type. This is a useful way to visualize the overall structure of the workflow type.

To view the workflow diagram, do the following:

1. Verify that the correct workflow type is currently open.

2. Click **View** > **Show Diagram**. A diagram representing the workflow type displays in a separate window.

    ♨ Alternatively, click **Show Diagram** on the toolbar.

    ♨ You can print a copy of this diagram by pressing **Ctrl+ P**.

Viewing the XML file

To display the XML file for any workflow type, do the following:

1. Verify that the correct workflow type is currently open.

2. Click **View** > **Show XML**. The XML file displays in a separate window.

    ✎ This view is for reference only. If you want to copy or print an XML file, use the Export function to save the XML file to an external source, and copy or print it from there.

Topic:
Defining SpeechQ Workflows

A workflow is the automation of the document creation process according to preset rules. These rules are laid down in the process definition of a workflow. The process definition of a workflow describes all conditions involved in processing a document from start to finish: phases, the sequence of phases, the participants (users), the participants' roles (user roles), the properties attached to reports, applications involved in the document creation process, and so on.

Within a workflow, a phase represents a distinct unit of work which is usually performed by a workflow participant with the required user role. Below is a description of the transcription phase, in which a document is corrected:

- Phase name—transcription.

- Participants—users with the user role of Medical Transcriptionist.

- Position in the workflow—between the recording and review phases.

- Workflow preconditions—the recording phase involving speech recognition or digital dictation.

- Activity—the Medical Transcriptionist checks the recognized text for accuracy and replaces incorrectly recognized words and phrases if required or manually types out the information in the sound file. When the MT is finished, the document progresses to the next phase.

A SpeechQ workflow is made up of a series of phases. Reports progress through the workflow by being promoted from one phase to the next. Movement between phases is done automatically by SpeechQ.

Different users participate in different phases depending on their user role.Within each phase, a report may be in one of four states.

The following workflows are examples of how users can work with SpeechQ, they do not include every eventuality. All these workflows are covered by the standard workflow type.

- Dictate-Edit-Sign

- Standard speech recognition workflow

- Standard dictation workflow

Dictate-Edit-Sign

The Dictate-Edit-Sign workflow type enables authors with the user role of Attending to create and finish reports themselves in one session, without sending them out for transcription. This workflow is defined as follows:

- The recording phase includes recording, speech recognition, correction and signature.

- The user role involved is that of Attending.

1. The Attending selects an order and creates a report based on that order.

2. The Attending records the dictation using speech recognition, and corrects their own report document.

3. The Attending signs the final report.

4. If the ConText Adaptation process detects unknown words in the final report, the Attending is asked by SpeechQ to edit the unknown words.

5. The report is delivered as specified in the report properties (printout, fax, email, or not delivered at all).

6. The report is ready to be archived and purged.

Standard Speech Recognition Workflow

This workflow type is for creating a report with speech recognition enabled whereby correction of the recognized text is done in a different phase by a different workflow participant. This workflow is defined as follows:

- The report creation and processing involves different phases which require different user roles.

- The user roles involved are Resident or Attending, and Medical Transcriptionist.

- The routing between phases is more complex.

1. The author selects an order and creates a report based on that order.

2. The author records the dictation using speech recognition. When recording is finished, the report progresses to the transcription phase.

3. The Medical Transcriptionist checks the report for incorrectly recognized words and makes the necessary corrections. When correction is finished, the report progresses to the review phase.

4. The author checks the report document. If the author rejects the report, it is returned to the MT for further work.

The author accepts the report. If they are an Attending, they sign the report and it progresses, after adaptation, to the delivery phase. If they are a Resident, it progresses to the approval phase, where it is checked by an Attending and then signed.

5. At this point the author is asked by SpeechQ to edit any unknown words that were detected by the ConText Adaptation process. The report itself progresses to the delivery phase.

6. The report is delivered as specified in the report properties (printout, fax, email, etc.).

7. The report is ready to be archived.

Standard Dictation Workflow

This workflow type is for creating a report using conventional digital dictation followed by manual transcription. This workflow is defined as follows:

- The report creation and processing involves different phases which require different user roles.

- The user roles involved are Resident or Attending, and Medical Transcriptionist.

- The routing between phases is more complex.

1. The author selects an order and creates a report based on that order.

2. The author records the dictation. When recording is finished, the report progresses to the transcription phase.

3. The Medical Transcriptionist types out the report document. When transcription is finished, the report progresses to the review phase.

4. The author checks the report document. If the author rejects the report, it is returned to the MT for further work.

The author accepts the report. If they are an Attending, they sign the report and it progresses to the delivery phase. If they are a Resident, it progresses to the approval phase, where it is checked by an Attending and then signed.

5. The report is delivered as specified in the report properties (printout, fax, email, etc.).

6. The report is ready to be archived.

⟲ SpeechQ for Radiology also supports transcription at the MedQuist transcription platform.

Phases and States

A phase is a distinct part of the workflow where a user processes the report in a specific way. For example, recording, transcription and review are all workflow phases.

Within each phase there are four pre-defined states: waiting**,** in progress**,** suspended**,** finished**.** The diagram below illustrates how these states follow on from each other and interact.

When a report is ready for the next processing step, its state is waiting. As soon as this processing step is started, the report's state changes to in progress. If processing is interrupted, the state changes to suspended; when working is resumed, the state changes back to in progress.

When a report reaches the state finished, it is promoted to the next phase.

Phases

The following table describes phases:

Phase	Description
Recording	In this phase the Resident or Attending records a report, and a sound file is created.
Transcription	In this phase the Medical Transcriptionist creates a text document manually from a sound file or compares the sound file with the recognition result, i.e. the text which has been inserted into the document through speech recognition. The MT edits the document and replaces any incorrectly recognized words or phrases.
Review	In this phase the Resident checks that transcription has been performed accurately.
Approval	In this phase the Attending reviews a Resident's report before signing it.
Adaptation	In this phase ConText Adaptation takes place
Delivery	• **RIS Delivery**—In this phase the report is sent to an external information system for storage (if you are not connected to a HIS/RIS, the system still executes this phase but with no result). If RIS Delivery fails, the report remains in the RIS Delivery phase with the state suspended. Once it is successful, the second Delivery phase occurs: • **Document Delivery**—In this phase the report is delivered, such as printed, faxed or attached to an e-mail. If delivery fails it remains in the Document Delivery phase with the state suspended.
Completion	In this phase a report is waiting for archiving, and eventually purging.

The transition from one workflow phase to the next is referred to as routing. The sequence of phases in a workflow is determined by its workflow definition. This means that the routing from one phase to the next has also been laid down in the workflow definition and is an automated process.

States

The following table describes states:

State	Description
Waiting	This means that a report has not yet been worked upon in this phase.
Waiting (checked out)	This means that a report has been opened for work, but closed again before it has been finished.
In progress	This means a report is being worked upon at the moment.
Finished	This means that a report is ready for promotion to the next phase.

Topic:
Creating Workflow Types

Default SpeechQ Workflow Type

All workflow types in the Process definition Tool are derived from the default SpeechQ workflow type. This is an extensive workflow type, supporting most basic SpeechQ workflows. It also acts as a template for an Administrator when creating new workflow types..

To open the default workflow type in the main window, click **New** on the toolbar. Alternatively, go to the **File** menu and select **New**. The subtrees and nodes of the workflow types are displayed in the XML tree. Basic information is displayed in the Process Header. You can now begin to edit this workflow type to suit your needs.

🗐 The name of the default workflow type is PSP Workflow Type and the ID of the default workflow type is pspWorkflowType.

Creating and Saving Workflow Types

Since all workflow types created in the Process Definition Tool come from the same default workflow type, please pay attention to the following points in order to avoid confusion between the workflow types you create.

Creating a New Workflow Type

To create a new SpeechQ workflow type, do the following:

1. Click **New** on the toolbar. The default SpeechQ workflow type opens in the main window.

2. Click **PROCESSHEADER** in the XML tree. The corresponding information fields display in the Properties pane.

3. Assign the new workflow type a name and unique ID, and enter any additional information.

4. Edit the workflow type and customize it to suit your needs.

Saving a New Workflow Type

The default destination for saving workflow types is the My Documents folder of the workstation on which the Process Definition Tool is installed. Wherever you save workflow types, bear in mind that this folder must be accessible to the Workflow Administration, from where they are imported into the SpeechQ system. Workflow types are saved as XML files with the format: filename.SFPDLxml.

When saving workflow types, it is important to note the following:

- The Save button on the toolbar has the same function as the Save as option on the File menu only if the workflow type is a new workflow type and has not been saved before.

- You need to assign the workflow type a file name when you save it. This is the name that is displayed in the Window menu when the workflow type is open.

- The Save function always saves the whole workflow type; you do not have to have the workflow type name selected in the XML tree. If you want to save individual nodes or subtrees, use the Export/Import menu.

Editing Workflow Types

Editing a workflow types takes two forms: editing the XML tree so that the subtrees contain the correct nodes, and editing the properties of the nodes themselves. These properties change according to which subtree the node belongs. For details on editing node properties, please refer to the links below.

Editing the XML Tree

The XML tree is divided into the following subtrees; they come by default and cannot be deleted.

The subtrees (with the exception of Process Header and Viewer) contain nodes, which are the individual XML files of the workflow type.

Creating New Nodes

To create a new node, do the following:

1. Click **Edit** > **Insert** and select the subtree for which you want to create a node.

    ☞ You can also right-click the subtree heading (or any node in the subtree) and click **Insert [subtree name].** A dialog box displays enabling you to create the respective node.

2. Enter the required information and click **OK**. The new node displays in the subtree.

3. Make any necessary changes in the properties pane.

4. Click **Apply** to save your changes or click **Cancel** to discard them.

    ✐ You can save nodes that you have created and re-use them in other workflow types by using the Export/Import menu.

Editing Nodes

To edit the properties of a node, verify that the correct node is selected in the XML tree and make the changes you want in the properties pane. Click **Apply** to save your changes or click **Cancel** to discard them.

Deleting Nodes

To delete a node, do the following:

1. Select the node that you want to delete in the XML tree.

2. Click **Edit** > **Delete node**.

🔔 You can also right-click the node and click **Delete**.A confirmation message displays.

3. Click **OK**.

👉 The Edit menu has the standard shortcuts for deleting and cutting nodes. The following advanced shortcuts also work:

Key(s)	Function
Ctrl + Delete	Delete node.
Ctrl + Insert	Copy node.
Shift + Insert	Paste node.
Shift+ Delete	Cut node.

Properties Pane - Field Icons

The fields in the Properties pane display node properties. These fields can contain read-only information (properties which are unavailable) and properties that you can modify.

Mandatory Fields

An exclamation mark (!) to the left of a property means that it is mandatory and a value must be completed.

Field Types

Field	Description
Text entry	Information consisting of letters and numbers. For example, a patient's name and address.

Field	Description
Value range	Information consisting of numbers only. For example, social security number, fax number. ✎ Some of these fields will have predefined maximum or minimum values. If you enter a value outside this range, the value will revert either to the last saved value or to the nearest corresponding limit. Make sure to check all new entries before applying your changes.
Number	Information consisting of numbers, including decimals. For example, a patient's height or weight.
Date and time	Information consisting of a date and time. For example, a patient's date of birth, report creation date. 🔔 Click the icon to display a calendar. Click on a date in the calendar to enter that date in the field. The date and time format displayed and the format you can enter depends on the regional settings of your Windows operating system (**Start > Settings** > **Control Panel** > **Regional Options**).
Single selection list	Information appears as a drop-down list; only one selection is possible. For example, patient gender, language.
Multiple selection list	Information appears as a drop-down list; more than one selection is possible. For example, report delivery method (fax, printout, email). ✎ Making no selection may also be a valid option for multiple-selection list fields, therefore it is possible for a multiple-selection list to be mandatory and still empty.

Field	Description
File menu	Information must be imported from outside the SpeechQ system, or the property is linked to information outside the system. Clicking the icon displays the View and Browse menu commands: • Click **View** to open the linked information. • Click **Browse** to search for the relevant information and import it into the system.

Process Header

To display the Process Header, click **PROCESSHEADER** in the XML tree. You can define information about the workflow type, which is then available in the Workflow Administration module.

Selecting the Process Header displays the following basic information about the current workflow type:

Option	Description
ID	This is a unique identifier for this workflow type.
Name	This is the name of the workflow type as it will be displayed in the SpeechQ Workflow Administration module.
Author	This is the name of the person or organization who created the workflow type.
Version	This is the version of the SpeechQ software currently installed.
Description	Here you enter a brief description of the workflow type.
Documentation	See Online Help.

Option	Description
Creation date	This is the date and time that the workflow type was created.
RIS	This determines if reports need orders or examinations to be assigned to them before they can be finished and signed. A value of TRUE, means a normal workflow: reports need an order or examination assigned to them before they can be completed. A value of FALSE, means that a report can be finished and signed without an order or examination. The Assign Order button of the Report Station is not visible for reports created using this workflow type.

Topic:
Configuring Application Properties

SpeechQ Applications can broadly be divided into two categories: server-side and client-side.

Server-side Applications

These are for the automated processes that take place in the background, for example delivery, clean-up, statistic calculation, etc.

These Applications have the value `Procedure` in the Data type field of the properties pane.

Client-side Applications

Internal client-side Applications are for the standard end-user phases of the workflow, for example recording, transcription, approval, etc.

SpeechQ also supports external client-side Applications, for example for external billing, which can be connected to the system.

Client-side Applications have the value Application in the Data type field of the properties pane.

Application Properties

When you select an Application in the XML tree, the properties pane displays the following information:

Property	Description
ID	This is the SpeechQ ID for this Application.
Name	This is the name of the Application as it appears in the XML tree.

Property	Description
Description	This is a description of the Application.
Data Type	This tells you if the Application is server-side or client-side. The available values here are: • Application (client-side) • Procedure (server-side)
Executable Name	If this Application contains an executable file (*.exe), this is displayed here. This is only relevant for external client Applications.

When you select an Application in the XML tree, the properties pane displays the following parameter information:

Parameter Information	Description
Parameter	These are the parameters which the Application needs to operate. The values are taken from the Datafields of this workflow type.
Index	This determines the position of the parameter (starting with 0) for the Application.
Mode	This tells you if the parameter is an input, output or through parameter.

Parameter Information	Description
Data type	These are standard Microsoft SQL server data types. The available values here are: • Datetime • File • Float • Integer • String
Description	This is a description of the parameter.

When you select an Application in the XML tree, the Formal Parameters group box displays the following buttons:

Button	Description
New	Define a new parameter.
Edit	Modify an existing parameter.
Remove	Delete a parameter.
Apply	Save your changes.
Cancel	Discard your changes.

Default Applications

The default SpeechQ workflow type comes with the following Applications:

• Starter component for recording with speech recognition

- Starter component for recording with digital dictation

- Starter component for routing Transcriptionist and Attending

- Starter component for review with recorder

- Starter component for review with speech recognition

- Starter component for correction

- Starter component for approval

- Starter component for transcription

- Starter component for delivery of preliminary report

- Starter component for adaptation

- Starter component for delivery to RIS

- Starter component for export to code runner

- Starter component for document delivery

- Starter component viewing the result document

- Starter component for clean-up

Topic:
Defining Datafields

Datafields display in other SpeechQ modules as report properties. They carry information about a report from one phase to the next. By defining the Datafields in this module and setting the access rights, you determine which property fields appear in the other modules of SpeechQ.

Datafield Properties

When you select a Datafield in the XML tree, the properties pane displays the following properties:

Property	Description
ID	This is the SpeechQ ID for this Datafield.
Name	This is the name of the Datafield as it appears in the XML tree.
Read Access	These are the user roles that are allowed to read this field.
Write Access	These are the user roles that are allowed to enter information in this field.
Description	This is a description of the Datafield.

Property	Description
Data type	These are standard Microsoft SQL server data types. The available values are: • `Datetime` • `File` • `Float` • `Integer` • `String` • `Enum` • `Multienum`
Core enumerable	The value here will normally be `Custom`. If it is not, this field tells you that it's values can be out of a set of values provided by the system: • `Printer` • `Worktype` • `Delivery type`
Maximum length (for strings)	If the Datafield is a string, this defines the maximum number of characters allowed for the string.
Minimum	If the Datafield has a numeric value (e.g. Turnaround time), this is the minimal value allowed.
Maximum	If the Datafield has a numeric value (e.g. Turnaround time), this is the maximum value allowed.
Initial value	This is the default value for this Datafield when creating a new report.

Property	Description
Mandatory admin default	If the value for this is `True`, this Datafield appears as an admin default in the **Default Properties** pane on the **Users** bar of the Workflow Administration module.
Advanced	If the value for this is `True`, this Datafield appears on the **Advanced** report properties tab. If `False`, it appears on the **Standard** report properties tab.

Adding, Editing, and Removing Enum Values

When you select a Datafield in the XML tree, you can also add, edit, and remove Enum values.

The Enum values group box displays the following buttons:

Button	Description
New	Define a new Enum value. ☞ Values for Enums and Multienums can be either 0 or any positive or negative integer
Edit	Edit an existing Enum value.
Remove	Delete the selected Enum value from the list.

☞ These functions are only available is the selected Data type is Enum or Multienum. Enum means that the user can select only one of the available values; Multienum means that the user can select none, one or more of the available values.

Default Datafields

The default SpeechQ workflow type comes with the following Datafields:

- Report name

- Comment

- Work type

- Delivery

- Email address

- Printer

- Fax number

- Priority

- Due at

- Turnaround time (hours)

- Review accepted

- Delivery successful

- Sound file length

- Use speech recognition

- Correction needed

- Can author sign

- Author signed

- Document file

- Sound file

- SRR file

- Delivery PR needed

- MedQuist transcription

- Adaptation

- Document template file

Topic:
Defining Participants

SpeechQ contains various user roles; some have an administrative function, while others interact purely with the end-user module (SpeechQ Report Station). In the Process Definition Tool, all participants in a workflow type must belong to one of the end-user roles. It is possible that there are more than one participants in the same user role.

There are three end-user roles in SpeechQ:

Role	Description
Resident	These users are involved in the recording and review phases.
Attending	These users are involved in the recording, approval and signature phases.
Medical Transcriptionist	These users are involved in the transcription phase.

* Although you can create new participants in the same way that you can create a new node for any subtree, all participants have to belong to one of these three user roles. You can adapt user roles to fit different workflow types, by altering their properties, but you cannot create entirely new user roles.

For example, you may want to define a workflow which contains two review phases by Attendings. In this case you would need to define two participants with the user role Attending—Attending and Senior Attending)—as well as the corresponding Applications and Transitions to link the two phases.

Participant Properties

When a participant is selected in the XML tree, the properties pane displays the following properties:

Property	Description
ID	This is the SpeechQ ID for this participant. ☠ Once you enter this value for a new participant in the Insert New Participant dialog box, you cannot modify it.
Name	This is the name of the participant as it appears in the Process Definition Tool, and in the report properties of the Report Station module.
User role	This is the SpeechQ user role. The value here can only be: • Resident • Attending • Medical Transcriptionist
Data type	This defines whether only actual users or also user workgroups are allowed for this workflow type. The available values here are: • User • User Workgroup
Visible	This defines whether the participant is visible as a report property field.
Read access	These are the Participants in whose report properties this field will appear.

Property	Description
Write access	These are the participants who can enter a value for this field (for example, an author can choose a particular Medical Transcriptionist for their report). The available values correspond to the existing Participants for this workflow type
Description	This is a description of the participant's role in the workflow.
Mandatory admin default	If the value for this is True, this Datafield appears as an admin default in the Default Properties pane on the Users bar of the Workflow Administration module.
Advanced	If the value for this is True, this Datafield appears on the Advanced report properties tab. If `False`, it appears on the Standard report properties tab

Topic:
Defining Activities

Activities are actions and processes in SpeechQ, performed either by users (for example: recording or approval) or by the SpeechQ system (for example: routing or delivery). They correspond to the phases of the workflow.

Activity Properties

When you select an activity in the XML tree, the properties pane displays the following properties:

Property	Description
ID	This is the SpeechQ ID for this activity.
Name	This is the name of the activity as it appears in the XML tree.
Documentation	See the Online Help.
Description	This is a description of the activity.
Action	This is how the activity is described in the Actions menu of the Report Station module.
Participant	This the participant associated with this activity. The available values correspond to the existing participants for this workflow type. The value (automated) indicates that the phase is executed on the server side.

Defining Word Macros

When you select an activity in the XML tree, you can also define Microsoft Word macros for use by users of the Report Station module.

The Word Macros group box displays the following buttons:

Button	Description
New	Insert a Microsoft Word macro. Enter the name and display name of the macro you want to insert.
	✍ The name must correspond exactly to the name of the macro in the MS Word macro directory. The display name is the name that will appear on the Actions bar of the Report Station.
Remove	Delete a macro from the list.

Adding and Removing Tools

The tools are the applications associated with this activity. The Tools group box displays the following buttons:

Button	Description
New	Add an application. Enter the name and display name of the macro you want to insert.
	✍ You can only add applications that are already in the workflow type.
	🔔 To make multiple selections, press the Ctrl key and click each application.
Remove	Select an Application and click Remove to delete it from the list. Multiple selections are not possible.

The Actual Parameters displays the parameters the activity needs to operate. They correspond to the Parameters for each Application.

Adding Client Parameters

Client parameters are fields that you can explicitly make available for the corresponding workflow phase, or force a user to enter a value. For example, you may want to ensure that the Comment field is always filled in after a report has been reviewed.

To add a client parameter to an activity, do the following:

1. Select the activity to which you want to add a client parameter in the XML Tree.

2. Click **New**. The Add New Client Parameters dialog box displays.

3. Select the parameter you want to assign to this Activity.

⌕ The available parameters correspond to the Datafields of the workflow type.

4. In the **Required** group box, do one of the following:

   ⇒ Select either **True** to make the field mandatory.

   ⇒ Select **False** to make the field optional.

5. Click **OK**. The new parameter displays and the dialog box closes.

Defining Default Activities

The default SpeechQ workflow type comes with the following Activities:

- Resident Recording

- Attending Recording

- Delivery PR

- Routing to Medical Transcriptionist

- Transcription

- Resident Review

- Attending Review

- Routing to Attending

- Approval

- Resident Adaptation

- Attending Adaptation

- Delivery Document

- Clean-up

- Completion

- Viewer

Topic:
Defining Transitions

SpeechQ processes reports by means of promoting them between the various phases of the workflow. A report with the state finished is taken out of one phase and moved to another, where it is given the state waiting. These movements are called transitions.

Transitions are performed conditionally; that is, the phase to which they take a report depends on which set of conditions has been fulfilled. No two transitions with the same starting point ('From' phase) should have identical conditions. If two such transitions were to have identical conditions, it cannot be guaranteed to which destination ('To' phase) the report would be sent.

Defining Transition Properties

When a Transition is selected in the XML tree, the properties pane displays the following properties:

Property	Description
ID	This is the SpeechQ ID for this Transition.
Name	This is the name of the Transition as it appears in the XML tree.
Description	This is a description of the Transition.
'From' Phase	This is the phase where the Transition begins.
'To' phase	This is the phase where the Transition ends.
Interrupt Transition	This indicates if it is possible to interrupt the current phase and move a report to a different phase (as in the function Back to). This is only possible if the state of the report is waiting.

Property	Description
Trigger access	If it is possible to interrupt this Transition, only the Participants listed here have the right to do so.
Activity execution delay	This is the time, in seconds, that the system will wait before executing the activity. During this time the report can be modified and mistakes corrected.

Defining Conditions

Conditions are the criteria that determine how and when a Transition will be performed. For example, when a report leaves the approval phase, the system will perform one of two Transitions, depending on the author's adaptation settings:

Condition	Transition Performed
Adaptation = 2	Approval -> Adaptation
Adaptation < > 2	Approval -> Delivery

Adding, Editing, and Removing Conditions

When you select a Datafield in the XML tree, you can also add, edit, and remove conditions.

The Conditions group box displays the following buttons:

Button	Description
New	Define a new condition.
Edit	Edit an existing condition.
Remove	Delete the selected condition from the list.

Defining Default Transitions

The default SpeechQ workflow type comes with the following Transitions:

- Recording Resident -> Delivery of preliminary report

- Recording Resident -> Routing (Medical Transcriptionist)

- Recording Resident -> Routing (Attending)

- Recording Resident (SR) -> Routing (Medical Transcriptionist)

- Recording Attending -> Delivery of preliminary report

- Recording Attending -> Routing (Medical Transcriptionist)

- Recording Attending -> Routing (Attending)

- Recording Attending -> Delivery RIS

- Recording Attending -> Adaptation (Attending)

- Recording Attending (SR) -> Routing (Medical Transcriptionist)

- Routing (Medical Transcriptionist) -> Transcription

- Transcription -> Review (Resident)

- Transcription -> Review & Sign (Attending)

- Transcription -> Recording (Back to)

- Transcription -> Recording Attending (Back to)

- Review (Resident) -> Routing (Medical Transcriptionist)

- Review (Resident) -> Routing (Attending)

- Review (Resident) -> Delivery RIS

- Review (Resident) -> Adaptation

- Review (Resident) -> Delivery RIS (SR)

- Review & Sign (Attending) -> Routing (Medical Transcriptionist)

- Review & Sign (Attending) -> Delivery RIS

- Review & Sign (Attending) -> Adaptation (Attending)

- Review & Sign (Attending) -> Delivery RIS (SR)

- Routing (Attending) -> Approval

- Approval -> Review (Resident)

- Approval -> Delivery RIS

- Approval -> Adaptation

- Approval -> Delivery RIS (SR)

- Delivery of preliminary report -> Routing (Medical Transcriptionist)

- Adaptation -> Delivery RIS

- Adaptation (Attending) -> Delivery

- Delivery Document -> Clean-up

- Clean-up -> Completion

- Delivery RIS -> Delivery Code Running

- Delivery Code Running -> Delivery Document

Viewer

This defines an Application that enables a user to read a report (without being able to modify it). In most workflow types, the Activity ID should always be *actViewer*.

Archiver

This defines an Application that enables a user to archive a report. In most workflow types, the Activity ID should always be *actArchiving*.

Exporter

This defines an Application that enables SpeechLink to query a report (e.g. via the report ID). In most workflow types, the Exporter ID should always be *actExporting*.

Module 4:
Using Desktop Integration SDK and Testing SpeechQ Integration Functions

Module Description

This module a basic understanding of the Desktop Integration Software Development Kit. It also covers procedures for using the tool to test SpeechQ integration functions.

Module Performance Objectives

After completing this module, you will be able to:

- use Desktop Integration SDK.

- configure Desktop Integration SDK and resolve integration issues installing the Desktop Integration SDK.

- implement common usage scenarios.

- test desktop integration functions.

Module Prerequisites

To understand the concepts and perform the tasks in this module, you should have completed the following courses:

- SpeechQ Introduction

- Speech Recognition Introduction

- SpeechQ Workflows

Topic:
Using Desktop Integration SDK

Desktop integration is the framework by which two or more software solutions co-operate at the user interface level, so to an end-user, the software solutions behave like one solution. This is particularly important when the different solutions:

- share the same monitor.

- can trigger an activity in a cooperating solution.

- have equivalent entities, and selection in the GUI should be propagated to other cooperating solutions.

This SDK is designed to be used for Desktop Integration of the SpeechQ Report Station module with other healthcare software systems.

Desktop Integration SDK has the following features and functionality:

- Starting and stopping the Report Station: The Report Station module can be started and stopped via the SDK.

- Logon and logoff: You can implement single sign-on and -off.

- Report and addendum creation: Both reports and addenda can be created, viewed and processed via the SDK.

- Report Station visibility: You can implement how and when the Report Station is visible, e.g. in a shared monitor installation.

- Report Station windows and dialog boxes: You can control which windows and dialog boxes display in the Report Station, as well as the position of the Report Station window itself.

- Report Station settings and states: You can query the Report Station's configuration settings and server connectivity state.

- Selection synchronization: Selection synchronization functionality on patient, order, exam and report levels enables you to implement, for example, CCOW's single patient selection.

- 1-box and 2-box installations and monitor sharing: By implementing a 1-box scenario, you can switch to a 2-box installation without the need for any code change. In the same way, by implementing an installation with shared monitor usage, you can switch to dedicated monitor usage without effort.

- CCOW integration: Desktop Integration SDK has all the functionality needed to implement a CCOW integration, but provides no compatible wrapper. Therefore, some integration effort is needed.

Topic:
Configuring Desktop Integration SDK and Resolving Integration Issues

This topic covres some of the more important factors that integrators should bear in mind while setting up the Desktop Integration SDK:

- Configuration file management

- Design considerations

- Desktop ID

- Showing and hiding the Report Station

- Keeping Report Station in the foreground

- Selection Rules

- Supported API interfaces

- Synchronous and asynchronous methods

- SDK events triggered by user interaction

Configuration File Management

Desktop Integration SDK searches for the configuration file RSDesktop.xml in the following order:

1. The application start-up directory (the directory in which the application which integrates the SDK is located).

2. The SDK directory.

3. If RSDesktop.xml is not found in either of the above locations, a default config file (also called RSDesktop.xml) will be written in the application start-up directory.

Default Content of the RSDesktop.xml

Below is the default content of the configuration file, which can be copied and inserted manually if needed:

```
<?xml version="1.0" ?>
- <RSDesktop xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="RSDesktop">
<ReportStationPath>C:\Program Files\SpeechQ
Client\</ReportStationPath>
<IntegrationReportStationPort>8192</IntegrationReportStationPort>
<IntegrationRSDesktopPort>8193</IntegrationRSDesktopPort>
<IntegrationReportStationHostIP>tcp://127.0.0.1</IntegrationReportStati
onHostIP>
</RSDesktop>
```

Applying Design Considerations

A decision needs to be made during SpeechQ Server Setup whether the SpeechQ Patient Administration module or SpeechLink will be used to populate the SpeechQ database with patients, orders and exams. It is not possible to use both the SpeechQ Patient Administration and SpeechLink for the same SpeechQ system. For details, refer to the Desktop Integration topic in the Metadata book of the SpeechQ for Radiology Data Definition Tool Online Help.

SpeechQ supports order- and/or exam-level reporting. It is the task of the integrator to decide which level to implement or, if this is a site-specific/configurable part of the cooperating application, to make this setting configurable.

Working Online and Offline

The SpeechQ client can operate either while actively connected to the SpeechQ Server, or while disconnected from it. These two modes of operation are known as Online and Offline modes. For more information regarding user interaction in this respect, please refer to the SpeechQ Report Station Online Help.

The integration must take care which mode the report station client is currently in, because certain functionality is either not available or not fully supported in offline mode (see individual function descriptions for details).

Whenever the connection state of the Report Station is changed, the event onConnectionStateChanged is fired. You can also query the property IReportStation.Connected at any time.

Integrating 1-box and 2-box Installations

All integrations for a 1-box installation automatically works for a 2-box installation. No recompilation is necessary when changing between two such installations. See the installation instructions for more details.

Closing SpeechQ Message Boxes

Your integration application can close non-critical SpeechQ message boxes and dialogs via the method IReportStation.CloseModalDialogs. This is not possible for messages with more than one option and where Cancel is not available.

For example, this is the best way to implement an abort for report or addendum creation.

Since messages generated by the integration application cannot be closed via IReportStation.CloseModalDialogs, it is recommended that you make each of these messages configurable so that they do not display.

For example, confirmation messages designed to alert first-time users to the implications of their actions may not be necessary for experienced users.

Configuring Desktop ID

In the SpeechQ Data Definition module, Desktop IDs need to be configured. This is done for the patient, order and exam tables, by selecting one column of each as the ID column. These columns are then used for looking up the patient, order and exam IDs passed via the Desktop Integration SDK.

Showing and Hiding the Report Station

If SpeechQ and a HIS/RIS/PACS share a desktop, you will need to configure the behavior of SpeechQ Report Station with regard to visibility and focus. It is recommended that you follow the guidelines below for implementing shared monitor usage, as this can easily be configured for an installation where each application has its own monitor, without requiring any code changes.

Defining SpeechQ States

When SpeechQ is not in the foreground, it can be in one of the following states:

State	Description
In the background	Another application is in the foreground and has the focus. Otherwise SpeechQ behavior is as expected. During dictation, the SpeechQ recognition previews are still visible in the speech bubbles.
Minimized	The SpeechQ UI is not visible but can be reopened via the icon in the Windows Taskbar. This can only occur through user interaction.
Hidden	No UI is visible and there is no icon visible in the Windows Taskbar. The user cannot open SpeechQ other than via the SDK. In Hidden mode, Command & Control is still enabled, but dictation is not possible. Open reports are not suspended or closed.
Standby	This mode can only be initiated via the SpeechQ PACS menu. The Report Station is hidden and all open reports are suspended and closed. The only way to display SpeechQ afterwards is via the integration. Command & Control is not available in this mode.
Toolbar mode	When a report is open, the SpeechQ UI can be reduced so that only the Recording toolbar is visible. This mode can only be enabled via SpeechQ (either by spoken command or the View menu).

Auto-hiding SpeechQ

By default, the SpeechQ auto-hide behavior is enabled. This means that whenever a report is created via the integration application (i.e. via the SDK), SpeechQ hides when the report is closed. This is also true for errors during report creation.

The ReportStation.exe.ini settings AlwaysHideByPACS and NeverHideByPACS influence the actual auto-hide behavior of the Report Station for reports created manually or via the SDK. The following table lists all possible combinations and their effects:

Precondition			Result	
AlwaysHideByPACS	NeverHideByPACS	Report creation	Auto-hide	Does Report Station hide after report close?
Default Configuration				
0	0	Via the SDK	On	Yes
0	0	Via the SDK	Off	No
0	0	Manually via the GUI	N/A	No
Dedicated Monitor Usage (2-Box Installation)				
0	1	Via the SDK	On	No
0	1	Via the SDK	Off	No

Precondition			Result	
AlwaysHideByPACS	NeverHideByPACS	Report creation	Auto-hide	Does Report Station hide after report close?
0	1	Manually via the GUI	N/A	No
Shared Monitor Usage (1-Box Installation)				
1	0	Via the SDK	On	Yes
1	0	Via the SDK	Off	Yes
1	0	Manually via the GUI	N/A	Yes
Also for dedicated monitor usage—not an envisaged use case, but included for completion				
1	1	Via the SDK	On	No
1	1	Via the SDK	Off	No
1	1	Manually via the GUI	N/A	No

☼ NeverHideByPACS always overrules AlwaysHideByPACS. For example, SpeechQ will not auto-hide even though both options are set to 1.

☼ Pin SpeechQ overrules all other options—Report Station will always be visible. Auto-hide or an explicit hide via the SDK has no effect.

Defining SDK Methods

The following SDK methods will affect SpeechQ's visibility:

Method	Description
IReportStation.CloseReports **IReportStation.CloseSingleReport**	Implicitly auto-hiding the Report Station.
IReportStation.HideReportStation	Explicitly hiding the Report Station.
IReportStation.ShowReportStation	Explicitly opening a hidden Report Station. ☼ The AutoHide flag passed in the method IReportStation.ShowReportStation can be used to indicate whether the Report Station module should automatically hide itself after a report has been closed (AutoHide=TRUE) or should remain visible (AutoHide=FALSE).
IReportStation.BringReportStation ToForeground	Bringing a minimized or background Report Station to the foreground and giving it the focus.
IReportStation.IsReportStationVis ible	Querying the state of SpeechQ.

Configuring Report Station Settings

The following settings in the file ReportStation.exe.ini also affect SpeechQ's visibility:

Setting	Description
NeverHideByPacs	Defining whether SDK show/hide calls should be ignored. ⟳ This must be set to 1 if SpeechQ has its own dedicated monitor.
AlwaysHideByPacs	Always hiding the Report Station after a report is closed, regardless of whether the report was opened via SpeechQ or the SDK.
ToggleIntegration	Defining with which keyboard shortcut a user can show or hide the Report Station.

Configuring Report Station User Interface Visibility Options

The following options in the Report Station PACS menu also affect SpeechQ's visibility:

Option	Description
Pin SpeechQ	Making SpeechQ always visible.
Show PACS	Explicitly hide the Report Station and display the PACS.

⟳ The Report Station PACS menu is only visible if SpeechQ is opened via the SDK.

Defining the SpeechQ Hierarchy

SpeechQ will process all of the above settings in the following order:

1. Report Station PACS menu—options selected here overrides all other settings. For example, Pin SpeechQ displays the Report Station even if IReportStation.HideReportStation is called by the integration.

2. ReportStation.exe.ini—settings made here will overrule any methods called by the SDK.

3. SDK methods—these will behave according to what is permitted by the above two configurations.

✏ By default, these settings are configured in such a way that the SDK methods will all behave as expected.

Applying Selection Rules

The SpeechQ Report Station module supports report creation based on orders and exams. Furthermore, the system allows the enforcing of strict report creation on either order or exam level.

The first report created for an order or exam is referred to as a report, subsequent reports with the same order or exam are referred to as addenda.

SpeechQ Report Station imposes restrictions, whereby the selection of some entities is not possible. This can occur when, for example, the selection of a group of exams for the creation of an addendum is not allowed. In addition, in some cases selection will be automatically extended. In this SDK these restrictions are modeled on API level, to provide all the information needed for report creation.

Applying General Rules

It is not possible to select orders for more than one patient or exams of more than one order for report creation.

It is possible to select one or more exams of the same order or one or more orders for the same patient for report creation.

Selecting Addendum Configuration Options

The following configuration options can be set in the WorkflowEngine.exe.ini, AddendumHandlingMode (on the SpeechQ Server):

Option	Description
Free	It is possible to create addenda freely with a mix of reported/unreported orders and exams.
FlexibleAddenda	It is only possible to create an addendum for multiple orders if they all have completed reports.
StrictWithExams	For every order, there has to be at least one exam. It is only possible to create reports for selected exams, not for orders alone. If an order is selected, the report is automatically assigned to the exam(s) belonging to the order.
StrictWithoutExams	there are no exams in the system; it is only possible to select orders for report creation

 For a more detailed explanation of each option, including graphics, see the online help file.

Applying General Strict Rules

Addenda can only be created for signed reports and only for the same orders/exams for which the original report was created. (This is enforced in the GUI by automatically extended selections of associated exams or orders).

Keeping Report Station in the Foreground

In a shared monitor installation, there are various ways in which you can define when the Report Station is in the foreground.

Bringing Report Station Explicitly to the Foreground

The method IReportStation.BringReportStationToForeground will bring the Report Station to the foreground and set the focus there.

✎ The Report Station must already be visible for this method to be effective.

Defining When the Report Station Is the Topmost Application

There are two ways in which the Report Station can be configured:

- Via the UI—Users can select various options in the Report Station PACS menu which will determine when the Report Station is topmost and when not:

Option	Description
Always on Top in Dictation Mode	SpeechQ will always be visible in Dictation mode.
Always on Top in Command Mode	SpeechQ will always be visible in Command mode.
Always on Top in all Modes	SpeechQ will always be visible in all modes.
Always on Top in Dictation Mode and Always on Top in Command Mode	SpeechQ will always be visible in Dictation and Command modes.

- Via the integration—You can also set these values via the property IReportStation.Visibility, by passing the relevant value for RSVisibility. This will overrule any existing settings.

- Visibility during recognition—The visibility of the Report Station application window during recognition is dependent on the PACS menu options AlwaysOnTopInXXXMode and the visibility of the Report Station when the recording is started. If the recording is started with the SpeechMike then the windows input focus is never stolen from the original application.

⟲ The preconditions are that the integrating application has the focus, a report has been created and that recording is started via the SpeechMike or Command & Control (not via mouse or keyboard).

The table below shows the possible results which can come from the various combinations of visibility settings:

Report Station visibility state	Report creation	AlwaysOnTop in Dictation mode	Report Station behavior
Hidden	Manually by the user	Off	In Hidden mode, no recording is possible. Therefore clicking a designated SpeechMike button will have no effect.
Hidden	Manually by the user	On	
Hidden	Via the integration	Off	
Hidden	Via the integration	On	
Minimized	Via the integration	Off	Stays minimized
Minimized	Via the integration	On	Flashes in the Taskbar but stays minimized

Report Station visibility state	Report creation	AlwaysOnTop in Dictation mode	Report Station behavior
Minimized	Manually by the user	Off	Stays minimized
Minimized	Manually by the user	On	Flashes in the Taskbar but stays minimized
Report Station in the background	Manually by the user	Off	Stays in the background
Report Station in the background	Manually by the user	On	Comes to the foreground
Report Station in the background	Via the integration	Off	Stays in the background
Report Station in the background	Via the integration	On	Comes to the foreground
Recording toolbar in the background	Manually by the user	Off	Stays in the background
Recording toolbar in the background	Manually by the user	On	Comes to the foreground

Report Station visibility state	Report creation	AlwaysOnTop in Dictation mode	Report Station behavior
Recording toolbar in the background	Via the integration	Off	Stays in the background
Recording toolbar in the background	Via the integration	On	Comes to the foreground

Using API Interfaces

Desktop Integration SDK can be integrated via either COM or via .NET.

Integrating SDK Via COM

To integrate the SDK via COM, reference from your integration to the following type libraries:

- RSDesktop.tlb

- RSDesktopInterface.tlb

☝ A COM integration from scripting languages (e.g. VBscript or Javascript) is currently not supported.

Integrating Via .NET

To integrate the SDK via .NET, reference from your integration to the following dll files in the SDK folder:

- RSDesktop.dll

- PIA.RSDesktopInterface.dll

Synchronous and Asynchronous Methods

Desktop Integration SDK supports both synchronous and asynchronous methods. Methods can be assumed to be synchronous unless listed in the table below.

☠ All events of asynchronous methods are called from different threads than the calling thread. The callback methods have to be implemented thread-safe.

The following table lists all asynchronous methods, and their related events:

Method	Event Fired
IReportStation.CloseReports	onReportNotify onReportStationHidden (if auto-hide is enabled)
IReportStation.CloseSingleReport	onReportNotify (one for each closed report) onReportStationHidden (if auto-hide is enabled)
IReportStation.CreateAddendumForExams	onReportCreationNotification
IReportStation.CreateAddendumForOrders	onReportCreationNotification
IReportStation.CreateReportForExams	onReportCreationNotification
IReportStation.CreateReportForOrders	onReportCreationNotification
IReportStation.ProcessReport	onReportOpened
IReportStation.SetActiveWindow	onWindowChanged

Method	Event Fired
IReportStation.ViewReport	onReportOpened

SDK Events Triggered by User Interaction

The following table below lists all those SDK events can only be triggered when the user interacts in a certain way with the Report Station UI. These events cannot be forced by the SDK:

UI Activity	Event Fired
Clicking the Disconnect or Connect toolbar buttons or menu options	onConnectionStateChanged
Expanding or collapsing exams in the Orders List	onExamDisplayChanged
Changing the content of the Orders List	onOrderDisplayChanged
Changing the selection state of patients in the Patients List	onPatientSelectionChanged
Changing the selection state of orders in the Orders List	onOrderSelectionChanged
Changing the selection state of exams in the Orders List	onExamSelectionChanged
Switching between the Reports, Orders, and Patients Lists, or between open reports	onWindowChanged
Hiding the Report Station via the System menu	onReportStationHidden

Topic:
Installing the Desktop Integration SDK

To install SpeechQ, follow the instructions outlined in the SpeechQ for Radiology Installation Online Help.

The Report Station module is the reporting client of SpeechQ. On the SpeechQ CD you can find an Integration folder containing:

- SQIntegration.dll—.NET assembly containing the ReportStation base API

- SQIntegration.dll.config—configuration file the SQ integration

- SQIntegration.remoting.config—configuration file the SQ integration

- RSDesktopInterface.dll—COM server for registering the Interface and Eventsink

- PIA.RSDesktopInterface.dll—.NET assembly of RSDesktopInterface.dll

- RSDesktopInterface.tlb—type library of the Interface

- RSDesktop.dll—the COM server with selected methods to be released with this version

- RSDesktop.xml—configuration file for .NET remoting (see below)

- RSDesktopLog.config—configuration file for logging

- RSDesktop.tlb—type library of the SDK

- install.bat—a batch file for registering the SDK

- uninstall.bat—a batch file for un-registering the SDK

- RegAsm.exe—Microsoft tool for registering .NET assemblies for COM usage

- msvcr70.dll—Microsoft dependency of RSDesktopInterface.dll

- msvcr71.dll—Microsoft dependency of RSDesktopInterface.dll

- gacutil.exe—utility tool for registering .NET assemblies

- install2box.bat—batch file for registering 2-box installations

- policy.1.1.SQIntegration.dll—publisher policy file for SQIntegration.dll

The ReportStation Desktop Integration SDK is designed so that if needed, the SpeechQ Report Station module and the co-operating/integrated healthcare software systems can reside on different machines.

Completing a One-Box Installation

In a one-box installation, SpeechQ and the healthcare software system are installed on the same PC. This is not always recommended, as the SpeechQ system requires a lot of system resources (CPU power and memory), and may affect the overall performance of the system if the HIS/RIS/PACS client also requires a lot of resources.

To install a one-box system, follow the steps below:

1. Copy the SDK folder from the CD to the installation PC.

2. Execute the file install.bat (for this you will need Administrator rights).

3. Edit RSDesktop.xml and change the following values as appropriate:

Value	Description
\<ReportStationPath\>	indicates the path to the installed ReportStation.exe.
\<IntegrationReportStationPort\>	indicates the Port for .NET Remoting communication from RSDesktop to ReportStation (equivalent to the ReportStation.exe.ini 'IntegrationSQPort' setting).
\<IntegrationRSDesktopPort\>	indicates the Port for .NET Remoting communication from ReportStation to RSDesktop (equivalent to the ReportStation.exe.ini 'IntegrationPACSPort' setting).
\<IntegrationReportStationHostIP\>	indicates the IP of the machine where ReportStation.exe is running (in ReportStation.exe.ini you have to specify in the 'IntegrationPACSHost' the IP of the machine where RSDesktop is running).

⤴ You can use your own configuration file, which you must place in the start-up directory of your application. To generate such a file, copy the default RSDesktop.xml to this directory and modify as appropriate.

Completing a One-Box Installation on Systems with Multiple Monitors

If more than one monitor is connected to your client PC, you have the following options to configure monitor usage by SpeechQ.

For example, a system with multiple diagnostic monitors, and one monitor for SpeechQ and the HIS/RIS/PACS GUI. In this case, the behavior of the integration with regards to switching between the two applications must be carefully configured.

Report Station can display or become hidden automatically when reports are created or closed by the integration. To enable this functionality, edit the ReportStation.exe.ini file in the client folder and change the setting AlwaysHideByPacs to 1.

You can also install a one-box SpeechQ system with multiple diagnostic monitors, and dedicated monitors for SpeechQ and the HIS/RIS/PACS GUI. In this case, AlwaysHideByPacs should be set to 0, and NeverHideByPacs to 1.

Completing a Two-Box Installation

In a two-box installation, SpeechQ and the healthcare software system are installed on the separate PCs. This is recommended in most cases, since the SpeechQ system requires a lot of system resources (CPU power and memory), and may affect the overall performance of the system if the HIS/RIS/PACS client also requires a lot of resources.

To install a two-box system, follow the steps below:

1. Install SpeechQ Report Station client on PC1.

    ✍ An installed .NET framework on PC2 is a prerequisite, as SQIntegration.dll uses .NET remote features to cross machine boundaries.

2. Copy the SDK folder from the CD to PC2.

3. Copy SQIntegration.dll, SQIntegration.dll.config and policy.1.1.SQIntegration.dll from the SpeechQ client directory on PC1 to the SDK directory on PC2 and overwrite the existing files.

4. Execute the file install2box.bat on PC2 (for this you will need Administrator rights).

5. On PC2, edit RSDesktop.xml and change the following values as appropriate:

Value	Description
<IntegrationReportStationPort>	indicates the Port for .NET Remoting communication from RSDesktop to ReportStation (equivalent to the ReportStation.exe.ini 'IntegrationSQPort' setting).
<IntegrationRSDesktopPort>	indicates the Port for .NET Remoting communication from ReportStation to RSDesktop (equivalent to the ReportStation.exe.ini 'IntegrationPACSPort' setting).
<IntegrationReportStationHostIP>	indicates the IP of the machine where ReportStation.exe is running (PC1).
<ReportStationPath>	Deletes the path to the ReportStation.exe from this tag (= <ReportStationPath></ReportStationPath>).

♧ You can also use your own configuration file, which you must place in the start-up directory of your application. To generate your own configuration file, copy the default RSDesktop.xml to this directory and modify as appropriate.

6. Configure PC1 so that SpeechQ is automatically started with the parameter " /pacs" (preferably in the Windows / Startup so that it automatically launches on OS startup)

✍ After the setup splash screen, Report Station is in hidden mode (you can see it in task manager), but is ready to receive commands from PC2.

7. In the SpeechQ client directory of PC1, edit the file ReportStation.exe.ini and change the following settings as appropriate:

   - IntegrationSQPort = 8192

   - IntegrationPACSPort = 8193

   - IntegrationPACSHost = tcp://<IP address of PC2>

   - AlwaysHideByPacs=0

   - NeverHideByPacs=1

☠ Updating the SDK after a SpeechQ upgrade: after upgrading SpeechQ on PC1, you must always execute steps 3 and 4 again.

Topic:
Implementing Common Usage Scenarios

This topic covers some of the more typical usage scenarios for the Desktop Integration SDK. It is not an exhaustive list, but is meant to give integrators an idea of how to implement some of the more common tasks:

- Starting and stopping the Report Station

- Logging on and off

- Showing and hiding the Report Station

- Handling events

- Creating new reports and addenda

- Opening existing reports

- Viewing reports

- Closing reports

- Selection synchronization between applications

- Switching between Report Station windows and dialogs

- Report Station settings and states

Starting and Stopping the Report Station

The methods IReportStation.Start and IReportStation.Stop are intended to be used for launching and terminating the Report Station.

In a two-box installation these two methods will have no effect, but it is still recommended that you call them so that your integration will also work for a one-box installation if required. In a two-box installation, you must start the Report Station manually (or automatically at system start-up, but with the command line parameter "/pacs").

↻ If the integration application terminates unexpectedly (e.g. due to an error), restarting the integration should automatically call IReportStation.Stop before calling IReportStation.Start. Otherwise, the state of the Report Station will not be known to the integration.

Logging On and Off

When the SpeechQ Report Station module is running, IReportStation.Logon and IReportStation.Logoff are intended to be used for single logon implementation. The same user accounts have to be available in both applications.

You can also implement single sign-on and sign-off functions to enable users to access multiple applications with a single logon.

Handling Events

The following table displays the events SpeechQ currently supports:

Event	Description
onReportNotify	This indicates that a report has been closed and provides the reportId and the reason (discarded, suspended, finished). The returned reason can be used to indicate in the co-operating application's work list how the report has been closed and also (for example) to remove finished work items from the work list.

Event	Description
onConnectionStateChanged	This event is fired when the connection state between SpeechQ and the Server changes. SpeechQ can either be connected to or disconnected from the Server. This can be initiated by the user manually via the UI or due to a failure.
onExamSelectionChanged	This event is fired when the user changes the selection of exams in the Orders List. The returned list exam IDs corresponds to the currently selected exams.
onExamDisplayChanged	This event is fired when the user changes the number of displayed exams in the Orders List. It is also fired when the user expands or collapses an order. The returned list of exam IDs corresponds to the currently visible exams in the Orders List.
onOrderDisplayChanged	This event is fired when the user changes the number of displayed orders in the Orders List. The returned list of order IDs corresponds to the currently visible orders.
onOrderSelectionChanged	This event is fired when the user changes the selection of orders in the Orders List. The returned list order IDs corresponds to the currently selected orders.
onPatientSelectionChanged	This event is fired when the user changes the selection of patients in the Patients List. SpeechQ allows only the selection of one patient at a time. The returned patient ID corresponds to the currently selected patient.
onReportCreationNotification	This event is fired after IReportStation.CreateReportForOrders, IReportStation.CreateReportForExams, IReportStation.CreateAddendumForOrders or IReportStation.CreateAddendumForExams has been completed. The returned parameter indicates if the operation was successful or not. If successful, the ID of the new report or addendum and the linked orders or exams are returned.

Event	Description
onReportOpened	This event is fired after IReportStation.ProcessReport or IReportStation.ViewReport has been completed. The returned parameter indicates if the operation was successful or not.
onReportStationHidden	This event is fired after the Report Station was hidden. The enum mode indicates if the Report Station was hidden due to the auto-hide mechanism or explicitly by the user via the UI.
onWindowChanged	This event is fired when the user switches between open reports or the Orders, Patients or Reports Lists.

Creating New Reports and Addenda

The Desktop Integration SDK offers numerous functions for report and addendum creation. This approach provides the most flexibility in whether, where and how to query user confirmation.

To implement a single "CreateReport" method, follow the steps below:

1. Use IReportStation.QueryReportCreationForOrders or IReportStation.QueryReportCreationForExams and pass the exam or order IDs (accession numbers) provided:

    ⇒ In the case that it returns RSReportCreationAction.raCreateNewReport, use the methods IReportStation.CreateReportForOrders or IReportStation.CreateReportForExams to create a new report. The event onReportCreationNotification will be fired, indicating if the report creation was successful or not.

    ⇒ In the case that it returns RSReportCreationAction.raCreateNewAddendum use the methods IReportStation.CreateAddendumForOrders or IReportStation.CreateAddendumForExams to create an addendum. The event onReportCreationNotification will be fired, indicating if the report creation was successful or not.

☠ The out parameter relatedIds returned by IReportStation.QueryReportCreationForOrders or IReportStation.QueryReportCreationForExams might contain an updated selection of order or exam IDs, and must therefore be used as input parameter for the addendum creation methods IReportStation.CreateAddendumForOrders and IReportStation.CreateAddendumForExams.

⇒ In the case that it returns RSReportCreationAction.raCannotCreateReport check the returned RSReportCreationFailReason:

Reason	Description
rfUnfinishedReports	The orders/exams passed have an unfinished report associated, which first needs to be finished. The ID of the unfinished report is returned in the parameter unfinishedIds. Use IReportStation.ProcessReport to open the first unfinished Report in its current workflow phase.

The following error conditions are a result of a selection rule violation which is linked to the chosen configuration option. You need to correct the selection before you can create a report. You can ignore the out parameters relatedIds and unfinishedIds in the following cases:

Error Condition	Description
rfDifferentPatients	The orders or exams passed are associated to different patients.
rfDifferentOrders	The passed exams belong to different orders.
rfDifferentOrderSets	The passed orders belong to different existing reports.
rfNoOrdersAllowed	OrderIds have been passed even though the fact that AddendumHandlingMode is set to StrictWithExams.

⇒ In the case that you receive the error RSError.RSInvalidID, the ID is not known in the SpeechQ system. The user could be informed and asked whether a report without an assigned order should be created (IReportStation.CreateReportForOrders (NULL)).

2. You can also create explicitly unassigned reports (unknown accession) by calling IReportStation.CreateReportForOrders(NULL).

Opening Existing Reports for Processing

Based on the accession number, which is an attribute modeled on order and/or exam level, reports can be queried by using the methods IReportStation.GetReportsForOrder and IReportStation.GetReportsForExam. To open an existing report and provide the actions which depend on the workflow phase the report is currently in, the method IReportStation.ProcessReport should be used.

The event onReportOpened will be fired, indicating if the report was successfully opened or not.

✍ You cannot open reports for processing in the following situations:

- If the report is completed (Finished & Signed).

- If another user is working on the report.

- If the selection criteria have not been fulfilled.

- You created this report with another user role.

- The report is not assigned to you.

Viewing Reports

Reports created for an order or an exam can be queried by using the methods IReportStation.GetReportsForOrder and IReportStation.GetReportsForExam. To view a report pass a reportId from this list to the method IReportStation.ViewReport.

The event onReportOpened will be fired, indicating if the report was successfully opened or not.

⟲ Reports open for viewing cannot be modified. To open a report for editing, *Opening Existing Reports*.

Closing Reports

It can happen that there arises an inconsistency between the information that displays in the Report Station module and that displays by the cooperating application. For example, when a user finishes reporting on an image displayed on a PACS and displays a new image, the report associated with the first image should be closed in SpeechQ. This prevents the user from reporting into the wrong report by mistake.

Integrators can therefore call IReportStation.CloseReports to close all open reports. To query the currently open reports in the Report Station, use IReportStation.QueryOpenReports, and to close individual reports call IReportStation.CloseSingleReport.

Implementing Selection Synchronization Between Applications

In order to implement selection synchronization in the Patients and Orders Lists between SpeechQ and the integration application, you must first determine which application will have which role:

- Master application—this is where the selection is initiated.

- Slave role—this is where the selection is synchronized.

It is possible to have both a static and a dynamic master/slave relationship (in a dynamic relationship, whichever application has the focus is automatically the master).

Implementing a SpeechQ Master Role

When the integration application receives an onOrderDisplayChanged or onExamDisplayChanged event, it must display all the orders passed by this event, to synchronize the display between the two applications.

When the integration application receives an onOrderSelectionChanged or an onExamSelectionChanged event, it must select or deselect the order or exam passed by this event, to synchronize the selection between the two applications.

⟡ Patient selection synchronization is not possible for a master role.

The integration application can also query the selection state of the SpeechQ Orders and Patients Lists via the following methods:

- IReportStation.QueryOrderSelection

- IReportStation.QueryExamSelection

- IReportStation.QueryPatientSelection

Implementing a SpeechQ Slave Role

To synchronize the content of SpeechQ lists with the integration application, use the following methods as appropriate:

- IReportStation.SetOrderDisplayState

- IReportStation.SetExamDisplayState

- IReportStation.SetPatientDisplayState

To synchronize the selection status of the SpeechQ lists with the integration application, use the following methods as appropriate:

- IReportStation.SetOrderSelectionState

- IReportStation.SetExamSelectionState

- IReportStation.SetPatientSelectionState

Synchronizing Lists Using Auxiliary Methods

Desktop Integration SDK also provides the following methods to help List synchronization:

- IReportStation.ClearOrdersList

- IReportStation.ClearOrdersSelection

- IReportStation.ClearExamsList

- IReportStation.ClearExamsSelection

- IReportStation.ClearPatientsList

- IReportStation.ClearPatientSelection

Switching Between Report Station Windows and Dialog Boxes

You can switch between open reports and the SpeechQ List views either via user action or via the integration application.

This can also be combined with selection synchronization in order to synchronize associated items. For example, you can configure your integration so that when the user switches between two open studies, the corresponding switch between the two open, associated reports is performed by SpeechQ.

Switching Via User Action (Master)

Whenever the user switches between one of the List views, or between open report documents, the event onWindowChanged is fired to inform the integration. In the case of switching between reports, the ID of the active report is also returned by this event.

Switching Via the Integration (Slave)

Call the method IReportStation.SetActiveWindow with the correct enum and attribute value, to switch to the relevant window.

If you try to switch to a window which is not open (for example, after start-up only the Orders List is open), the following exception will be thrown: rsWindowNotOpen.

To switch to a specific open report, the report ID must be passed in the attributes parameter of the method IReportStation.SetActiveWindow.

Placing the Report Station Window

You can use the method IReportStation.SetLocation to move the Report Station window from one monitor to another, or placing it within a monitor, depending on the way your system is configured.

✑ You cannot move the Report Station window when it is maximized.

Report Station Settings and States

You can query the settings made in the file ReportStation.exe.ini via the method IReportStation.GetReportStationSetting. This returns the values given by RSSetting, which can then be used by the integration during runtime to react in an appropriate way.

You can query or set the visibility status of the Report Station via the property IReportStation.Visibility, which returns the values given by RSVisibility.

The connection state of Report Station can also be queried by the property IReportStation.Connected.

Topic:
Testing Desktop Integration Functions

The following graphic represents the paths the two SpeechQ test applications take to interact with the Report Station application:
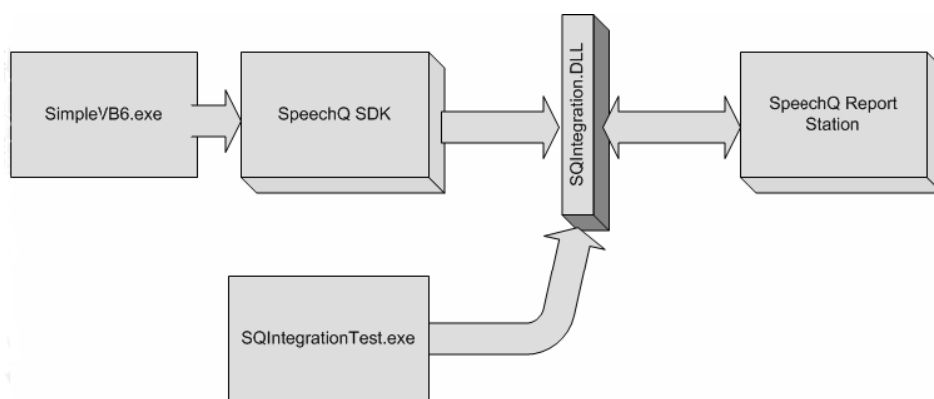
These test applications are used to test the integration functionality of Report Station. The two test application are: "SimpleVB6.exe" and "SQIntegrationTest.exe".

The first part of this topic coves the SimpleVB6.exe application. It tests the integration capability of Report Station going though the SpeechQ SDK (Software Development Kit). It tests Report Station and the SpeechQ SDK. The second part of this topic covers the SQIntegrationTest.exe application. This application bypasses the SDK and tests the integration functionality of just Report Station, through the SQIntegration.dll.

📕 For more in-depth SDK details not found in this document, refer to the SDK online help contained in the file DesktopIntegrationSDK.chm file located in the Help folder of the SDK.

Testing with SimpleVB6.exe

The "DT_SDK1.1.47.0_SQ59.1800_Release_Candidate" is part of the SP5 RC-1 (59.1800) release. "DT " means Desktop and "SQ59.1800" means it is to be used with build 59.1800 or later. It is upwards compatible, but not backwards compatible. In other words this SDK can be used on clients running SP5 RC-1 (59.1800) or later. Not clients running say HF3B (57.2040) or earlier.

The SDK contains the following folders:

Folder	Description
Help	Contains the SDK Help file. With Installation instructions etc.
Test	Contains the test applications that allow you to test the SDK. All you need from this folder is the SimpleVB6.exe file. This is the application you will use to test the SDK.
SDK	Contains the actual files that make up the SDK.

 For instructions about installing the SDK, refer to the "Installing the Desktop Integration SDK" section for differences between one box and two box integrations.

To use SimpleB6.exe, follow the steps below:

1. After you install the SDK, copy the **SimpleVB6.exe** file to the application's folder, such as C:\Program Files\SpeechQ Desktop SDK.

2. Run **SimpleVB6.exe.** SpeechQ starts and hides automatically and the SimpleVB6 dialog box displays:

Scratchpad
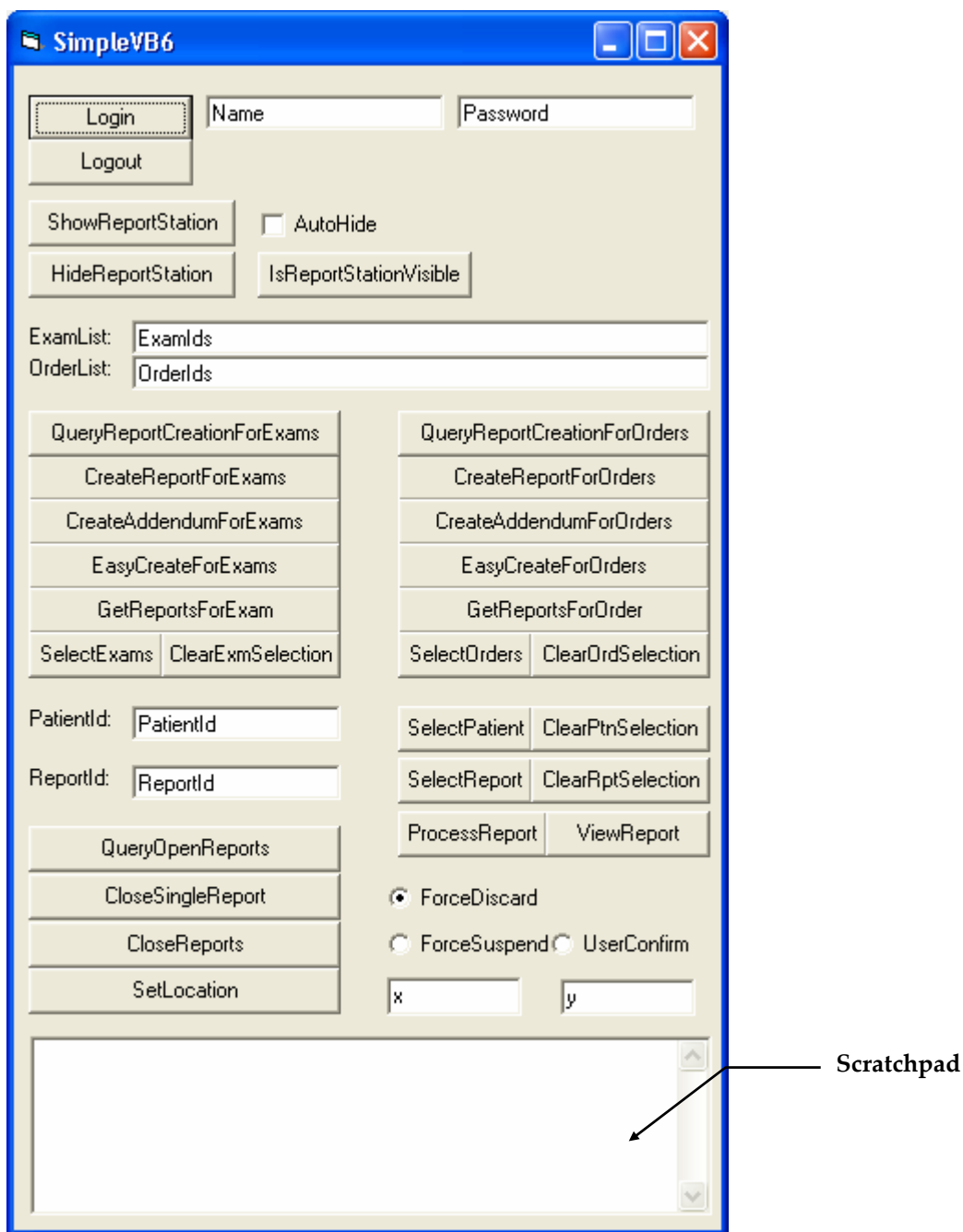
3. Enter a name and password of a SpeechQ user in the Name and Password text boxes then click the **Login** button. SpeechQ Report Station displays.

The following table describes buttons and fields in the SimpleVB6 dialog box:

Button/Field	Description
Login	Logs in to SpeechQ Report Station
Name	Enter the login name of the SpeechQ user that you want to log on as.
Password	Enter the password of the SpeechQ user that you want to log on as.
Logout	Logs you out and closes Report Station.
ShowReportStation	Displays Report Station in the foreground.
Auto-Hide	Select to hide Report Station after performing and action, such as finishing or suspending a report.
HideReportStation	Hides Report Station. Does not display Report Station on the taskbar or in the notification area.
IsReportStationVisible	Displays "IsReportStationVisible = true" in the scratchpad area if Report Station is open. Displays "IsReportStationVisible = false" in the scratchpad area if Report Station is not open.
ExamList	Enter an ExamID number to test exam functions.
OrderList	Enter an OrderID number to test order functions.
QueryReportCreationforExams	Displays a message in the scratchpad area as to what action may be taken on the exam displayed in the ExamList field.

Button/Field	Description
CreateReportForExams	Creates a new report for the exam displayed in the ExamList field.
CreateAddendumforExams	Creates a new addendum for the exam displayed in the ExamList field.
EasyCreateForExams	Creates a new report for the exam displayed in the ExamList field.
GetReportsForExams	Displays all reports associated with the exam.
SelectExams	Selects the exams in the Orders List the exam displayed in the ExamList field. If a selection already exists, this adds an exam to the existing selection.
ClearExmSelection	Clears the selection state of any exams that have been selected in the Orders List.
QueryReportCreationforOrder	Displays a message in the scratchpad area as to what action may be taken on the order displayed in the OrderList field.
CreateReportForOrders	Creates a new report for the order displayed in the OrderList field.
CreateAddendumforOrders	Creates a new addendum for the order displayed in the OrderList field.
EasyCreateForOrders	Creates a new report for the order displayed in the OrderList field.
GetReportsForOrders	Displays all reports associated with the order.
SelectOrders	Selects the orders in the Orders List the order displayed in the OrderList field. If a selection already exists, this adds an order to the existing selection.

| Button/Field	Description
ClearOrderSelection	Clears the selection state of any orders that have been selected in the Orders List.
PatientId	Enter a patient ID number to test patient functions.
ReportId	Enter a report ID to test report functions.
SelectPatient	Selects the patient ID listed in the PatientId field. Report Station displays this field in the Patients List. If the Patients List is not displayed in Report Station, clicking this button will switch to the Patients List (as if you clicked on the Patients List button in Report Station) and display a message box that says "rsSelectionFailed". If you have an actual list displayed (have clicked FIND) the patient ID will be selected, even if it is way down the list and cannot be seen on the screen.
ClearPtnSelection	Clears a Report Station patient list selection, for the patient ID listed in the PatientId field.
SelectReport	Selects the report listed in the ReportId field. Report Station displays this field in the Reports List. If the Reports List is not displayed in Report Station clicking this button switches to the Reports List (as if you clicked the Reports List button in Report Station) and displays a message box that says "rsSelectionFailed". If you have Reports List displayed, the report will be selected even if it is on a different tab (My Work list, Queued, or Completed) or cannot be seen on the screen.
ClearRptSelection	Clears a report selection for the report listed in the ReportId field.

Button/Field	Description
ProcessReport	Opens the report whose ID is listed in the ReportId field. If the report is on the users "My Work list" tab (Report Station does not have to be sitting on the Report List woks fine if sitting on the Orders List also).
ViewReport	Opens any report created by the logged in user for viewing. (any report on any tab under Reports List button).
QueryOpenReports	Displays any open reports in the scratchpad area.
CloseSingleReport	Closes the report listed in the ReportId field from Report Station. You must also select one of the following radio buttons: • ForceDiscard—select to close the report and discard the changes. Just as if the user clicked the Discard Changes button and then clicked OK. • ForceSuspend—select to suspend the report. • UserConfirm—select to set Report Station to display a dialog box telling the user "PACS has requested this report to be closed. How do you want to proceed?" This dialog box has three buttons, Suspend, Discard, and Cancel.

Button/Field	Description
CloseReports	Clicking this button with the ForceDiscard radio button selected displays a message box that says: "Select ForceSuspend or UserConfirm, please." If one of the following options is selected the application responds: • ForceSuspend—suspends ALL reports open in Report Station if selected when you click the CloseReports button. • UserConfirm—displays a dialog box that says "A report is currently open in SpeechQ. Do you want to keep the changes?" if selected when you click the CloseReports button. This dialog box displays three buttons: Yes, No, and Cancel. Clicking Yes suspends ALL the reports open in Report Station. Clicking No discards ALL the reports open in Report Station. Clicking Cancel closes the dialog box without performing any action on the open reports.
SetLocation	Moves Report Station to the screen location displayed in the x and y fields.

4. When you finish, close the SimpleVB6 dialog box.

Testing with SQIntegration.exe

This application bypasses the SDK and tests the integration functionality of just Report Station, through the SQIntegration.dll:
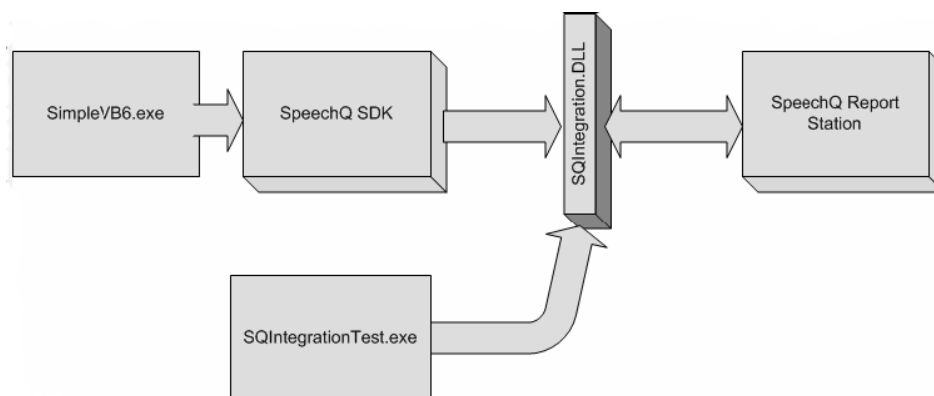
   At this time, only the Sectra (Philips EasyVision PACS) uses the SQIntegration.DLL directly to integrate with Report Station and bypass the SDK. So, if needed, SQIntegrationTest.exe can be used to test integration functionality of Report Station without going through the SDK.

The first thing that should be done when using SQIntegrationTest.exe is click **Settings > Settings**, and ensure the SpeechQ Path is set properly. It should be set to the local path where Report Station is installed. For example, C:\Program Files\SpeechQ Client. Starting SQIntegrationTest.exe will open and application that can be used to test the integration functions of Report Station without going through the SpeechQ SDK. As you look at the application, you will notice it has 5 tabs with which to work; Login, Patients, Exams, Orders, and Reports. Below each tab is an application scratchpad area the application will give you the user, feedback and information about the functions you are performing.

Using the Login Tab

The Login tab displays four section boxes:

- SpeechQ startup/login functions

- SpeechQ visibility

- Show message in SpeechQ

- Configuration

The SpeechQ startup/login functions section displays the following buttons:

Button	Description
Start SpeechQ	Starts the Report Station application in the hidden mode.
Stop SpeechQ	Stops a running Report Station application.
Login	Logs in to SpeechQ: • User login—enter a valid user name. • Password—enter the user's password.
Logout	Logs out of the Report Station application. You must click Stop SpeechQ to close Report Station.
Is connected?	Verifies that Report Station is connected to the server.

The SpeechQ visibility section contains the following items:

Item	Description
Show with auto-hide	Displays a hidden report Station application and sets auto-hide to "on", which hides the application after a report is finished.

Item	Description
Hide	Hides Report Station.
Show SpeechQ (no auto-hide)	Displays Report Station and turns off auto-hide. Report Station will not hide until the user presses F11 from within Report Station.
Show SpeechQ (Synchronous) (no auto-hide)	
Close all dialogs	Closes all open dialogs that may be open in report Station.
Window	Switches Report Station to the specified list view. Use in conjunction with the Activate button. You may have to manually switch between the lists for this function to work properly. • OrdersList—selecting this option and clicking the Activate button displays the Orders List in Report Station. • PatientsList— selecting this option and clicking the Activate button displays the Patients List in Report Station. • ReportsList—selecting this option and clicking the Activate button displays the Reports List in Report Station. • Report—use in conjunction with the Attributes field and the Activate button. Select **Report** in list, enter the report number in the Attributes field, and click Activate. This displays the specified report in Report Station.
Bring to front	Displays Report Station in the foreground.

Item	Description
Set visibility	Change visibility options. The options in the list box are: • Normal—sets Report Station to normal visibility. • TopAllModes—sets Report Station to be "Always on top" of other windows. • TopCmdMode—sets Report Station to come to the foreground when the user activates the Command mode. • TopDictMode—sets Report Station to come to the foreground when the user activates the Dictate mode. • TopDictModeandCm—sets Report Station to come to the foreground when the user activates the Dictate mode or the Command mode.
Get visibility	Displays Report Station's current visibility settings.

The Show message in SpeechQ section displays a custom dialog box in Report Station. The Message, Title, and Buttons fields all work in conjunction with the Show MessageBox in SpeechQ button to cause a message box to display in Report Station.

Item	Description
Message	Enter a message you want to display in the message box in this field.
Title	Enter the title of the message box in this field.

Item	Description
Buttons	Select the buttons you want the message box to include. The available buttons are: AbortRetryIgnore, OK, OKCancel, RetryCancel, YesNo, YesNoCancel. Clicking the "Show MessageBox in SpeechQ" button displays a dialog box in Report Station with the message, title, and buttons you selected. Clicking one of the buttons in the dialog box returns a dialog box in SQIntegrationTest saying which button was clicked.

The Configuration section displays the "Get config value" button and list box along you can use to view the configured value from the ReportStation.exe.ini file. For example, selecting **AlwaysHideByPACS** in the list box and clicking the **Get config value** button might return a dialog box in SQIntegrationTest that displays "0". This means the value of the AlwaysHideBy PACS parameter in the ReportStation.exe.ini file is "0". To change the value, open the ReportStation.exe.ini file edit and save it.

Using the Patients Tab

You can use the Patients tab to test the Patient List integration functionality in Report Station. To view patients, start Report Station, view Patient List area, and click the Find button.

The Patients tab displays the following buttons:

Button	Description
Select a patient by DesktopID	Selects a patient in the Patient List. To select a patient, type a DesktopID in the **Patient DesktopIDs** field and click the **Select a patient by DesktopID** button.
(De)Select a patient by DesktopID	Clears (deselects) a patient that is selected in the Patient List. Make sure the DesktopID for the patient displays in the "Patient DesktopIDs" field and click the button. Be sure the "select" checkbox is unchecked.

Button	Description
Clear patient selection	Clears (deselects) any and all patients selected in the Patient List regardless if anything is in the "Patient DesktopIDs" field or not.
Query patient selection	Displays a dialog box containing the Patient DesktopID of any patient(s) that you select in the Patient List at Report Station.

The following three buttons that the Patients tab displays work better if Report Station does not have a Patient List displayed. You can use these buttons even if you are not viewing a Patients List in Report Station:

Option	Description
Show patients by DesktopID	Opens the Patients List and displays the patient specified in the "Patient DesktopIDs" field.
Remove patients by DesktopID	Removes the patient specified in the Patient DesktopIDs field from the Patients List. ⟳ This does not remove the patient from the database.
Clear patient list	Clears all the displayed patients from the Patient List regardless of what is specified in the Patient DesktopIDs field.

Using the Exams Tab

Use the Exams tab if the SpeechQ database was set up to use Exam IDs instead of Order IDs. The buttons located on the Exams tab are the same as the buttons located on the Orders tab except the word "exam(s)" replaces the word "order(s)".

📖 For more information about the buttons on the Orders tab, see the "Using the Orders Tab" section below for a detailed description the buttons.

Using the Orders Tab

You can use the Orders tab to test the Orders List integration functionality in Report Station. To view orders, start Report Station, view the Orders list, and click the Find button.

The Orders tab displays the following buttons:

Button	Description
Select orders by DesktopIDs	Selects an order in the Orders List. To select an order, enter a DesktopID (Order number) into the "Order DesktopIDs" field and click the button.
(De)Select orders by DesktopID	Clears (deselects) an order you select in the Orders List. Verify the DesktopID (order number) for the order is in the **Order DesktopIDs** field and click the button. Be sure the "select" checkbox is unchecked.
Clear order (and exam) selection	Clears (deselects) any and all orders you select in the Orders List regardless to if anything is in the "Order DesktopIDs" field or not.
Query order selection	Displays a dialog box containing the Order DesktopID of any order(s) that you select in the Orders List.

The following three buttons that the Orders tab displays work better if Report Station does not have a Order List displayed. You can use these buttons even if you are not viewing a Orders List in Report Station:

Button	Description
Show orders by DesktopID	Opens the Orders List and displays the order you specify in the "Order DesktopIDs" field.
Remove orders by DesktopID	Removes the order you specify in the "Order DesktopIDs" field from the Orders List. This does not remove it from the database.
Clear order (and exam) list	Clear all the displayed orders from the Orders List regardless of what is specified in the "Order DesktopIDs" field.

The following buttons are located in the Report creation related functions section of the Orders tab:

Button	Description
Create report for orders	Creates a report in Report Station for the order(s) you specify in the "Order DesktopIDs" field. You can specify more than one order.
Create addendum for orders	Creates an addendum report in Report Station for the order(s) you specify in the "Order DesktopIDs" field. If you specify an order that does not already have a report, an error displays in the scratchpad area of SQIntegrationTest.
Get reports by order	Displays a dialog box the report IDs associated with the order number(s) you specify in the "Order DesktopIDs" field.

Button	Description
Query report creation by orders	Displays reporting capabilities for creating reports for the order(s) specify in the "Order DesktopIDs" field, as well as the reason why you cannot create a report. For example, if you enter an order number in the **Order DesktopIDs** field and click **Query report creation by orders**, a dialog box displays "CreateNewReport / Reason: None /…." If you enter an order number in the **Order DesktopIDs** field that already has a report in the system, a dialog box displays "CreateNewAddendum / Reason: None / …" If you enter two order numbers in the **Order DesktopIDs** field that are for two different patients a dialog box displays "CannotCreateReport / Reason: DifferentPatients / …"

Using the Reports Tab

You can use the reports tab to test the Reports List integration functionality in Report Station. Report Station does not have to be on the Reports List area.

The following buttons, sections, and fields are included on the Reports tab:

Button/Section/Field	Description
Select a report by reported	Selects a report in the Reports List. To select a report, enter a reportID in the "Report ID" field and click the **Select a report by reported** button.
	✍ If you are not viewing the Reports List, Report Station switches to the Reports List view.
	The report ID you specify in the **Report ID** field can be on any tab (My Work list, Queued, or Completed) in the Reports List at Report Station.

Button/Section/Field	Description
(De)Select a report by reported	Deselects clears the report you select in the Reports List. Verify that the reportID for the report is in the "Report ID" field and click the button. Be sure the "select" checkbox is unchecked.
Clear report selection	Clears any report you select in the Reports List regardless of the current tab you are viewing.
Query report selection	Displays a dialog box of the report you select in the Reports List.

The following buttons are located in the Workflow Functions section of the Reports tab:

Button	Description
New report	Creates a new report in Report Station without assigning an order to it.
Process report	Processes the report you specify in the Report ID field. ↻ This button opens the report for editing.
View report	Opens the report specified in the Report ID field. ↻ This button opens the report for viewing only.
Get report's phase	Displays a dialog box indicating the phase of the report you specify in the Report ID field. For example, a suspended report displays "actRecordingAttending". A report on the users Completed tab displays "actCompletion".
Is report addendum?	Displays a dialog box indicating whether the report you specify has an addendum attached. The dialog box displays "true" if the report you specify in the "Report ID" field has an addendum attached and "false" if not.

Button	Description
Report is modified?	Displays a dialog box indicating whether the report you specify has been modified. The dialog box displays "true" if the report you specify in the "Report ID" field has been modified and "false" if not.
Get orders for report	Displays a dialog box the order(s) assigned to the report specified in the "Report ID" field.
Get exams for report	Displays the exam(s) assigned to the report you specify in the "Report ID" field.
Opened reports management	Displays the Close all reports list box and button. You can use the button and the list to manipulate any and all open reports in Report Station. The Close all reports list displays the following options: • ForceSuspend—suspends any and all open reports after you click the "Close all reports" button. • ForceDiscard—discards any and all open reports after you click the **Close all reports** button. • UserConfirmation – displays a dialog box in Report Station that says "A report is currently open in SpeechQ. Do you want to keep the changes?" Clicking **Yes** suspends each of the open reports. Clicking **No** discards each of the open reports. Clicking **Cancel** cancels the operation does not close any of the reports.

Button	Description
Close specified report	Displays the Close specified report list box and button. You can use the button and the list to manipulate the report you specify in Report Station. The Close specified reports list displays the following options: • ForceSuspend—suspends the report you specify after you click the "Close all reports" button. • ForceDiscard—discards the report you specify after you click the Close all reports button. • UserConfirmation—displays a dialog box in Report Station that says "PACS has requested this report to be closed. How do you want to proceed?" Clicking **Yes** suspends each of the open reports. Clicking **No** discards each of the open reports. Clicking **Cancel** cancels the operation does not close the report.
Query open reports	Displays a dialog box displaying all reports that are currently open in Report Station.

Module 5:
Troubleshooting SpeechQ

Module Description

This module covers troubleshooting common SpeechQ issues, such as resolving issues regarding automatic updates for DSL users, barcode configuration, and SpeechMike buttons. The module also covers resolving corrupt user profiles, Report Station locking, slow response to voice commands, and poor recognition rates. It also covers resolving issues with saving Word documents, and unspecified errors.

Module Performance Objectives

After completing this module, you will be able to:

- resolve automatic update issues for clients using DSL connections.

- resolve SpeechMike barcode configuration issues.

- resolve SpeechMike button issues.

- resolve corrupt user profiles.

- resolve Report Station locking, slow response to voice commands, and poor recognition rates.

- resolve issues with saving Word documents.

- resolve unspecified errors after reinstalling Report Station.

Module Prerequisites

To understand the concepts and perform the tasks in this module, you should have completed the following courses:

- SpeechQ Introduction

- Speech Recognition Introduction

- SpeechQ Workflows

Topic:
Resolving Automatic Update Issues for Clients Using DSL Connections

Problem

The automatic update of the client fails when connected to the server through a DSL connection. The update takes an extremely long time and then reports a failure.

Cause

The exact cause has not been determined, but may be related to the error checking between the server and the client during file transfer.

Solution

Using the procedure below, manually copy the update folders to the client and run SQUpdater manually. The update folders are located on the server in the folder <installation drive>:Program Files\SpeechQ Server\Patcher Server\Patches\Client. There will be a folder for each update that has been installed on the server. The folders are named based on the version of the update. The following is a list of the updates since SP3:

Service Pack (SP) and Hot Fix (HF) Number	Version
SP3	1.1.56.1100
SP3HF1	1.1.56.1120
SP3HF2	1.1.56.1130
SP3HF3	1.1.56.1140
SP3HF4	Not released
SP3HF5	1.1.56.1160

Service Pack (SP) and Hot Fix (HF) Number	Version
SP3HF6	1.1.56.1170
SP3HF7	1.1.56.1180
SP4	1.1.57.1300
SP4HF1	1.1.57.1400
SP4HF2	1.1.57.1600
SP4HF3	1.1.57.2000
SP4HF3a	1.1.57.2010

☞ Beginning with SP3, hot fixes are cumulative. Also, any SP3 hot fixes are included in SP4. Therefore, if a client is installed with the SP3 full CD, and the server is running SP4HF3a, the client will need to be updated with the SP4 update and the SP4HF3a update.

To resolve this issue, follow the steps below:

1. Log on to the workstation as an administrator of the SpeechQ Client workstation.

☠ You must log on as an administrator of the workstation, or the update will fail.

2. Copy the appropriate update folders from the server to the client.

☞ The update folders should be copied to the client folder<installation drive>:Program Files\SpeechQ Client\PatcherClient\Download\Client.

✐ Depending on the speed of the connection, you may want to copy the update folders to a CD, take the CD to the client's physical location, and copy the folders to the client workstation.

✐ If this is a new installation of the SpeechQ Client, the Download and Client folders must be created.

3. On the SpeechQ Client workstation, open the oldest update folder that you recently copied from the server, and run the **SQRUpdater.exe** file.

☠ If the SpeechQ Client Update Service has been disabled on this client, at the end of the update, an error message displays that the SpeechClientUpdateService could not be updated. If you receive this error, click **OK** and continue.

4. When the update is complete, open the next oldest update folder and run the **SQRUpdater.exe** file.

5. Continue opening the next oldest update folders and running the **SQRUpdater.exe** files until all updates have been applied in order.

☠ If the SpeechQ Client Update Service has been disabled on this client, at the end of an update, an error message displays that the SpeechClientUpdateService could not be updated. If you receive this error, click **OK** and continue.

6. Test the SpeechQ Client workstation for proper operation.

Topic:
Resolving SpeechMike Barcode Configuration Issues

Problem

The user must manually place the cursor in the search field before scanning a barcode.

Cause

The Speech Mike is not properly configured for barcoding.

Solution

The SpeechMike CD contains utility for configuring the barcode option.

To configure the SpeechMike for the barcode option, follow the steps below:

1. From the SpeechMike CD, open the **BarcodeConfiguration** folder and run the program **BarcodeConfig.exe**. The Barcode Configuration window opens.

2. Place the cursor in the **Prefix String** box.

3. Press **Ctrl + spacebar**. The Insert Non-Printable Character opens.

4. Select **STX (start of text) 02h** and click **OK**.

5. Place the cursor in the **Suffix String** box.

6. Press **Ctrl + spacebar**. The Insert Non-Printable Character opens.

7. Select **ETX (end of text) 03h** and click **OK**.

8. Click **Download to Device**.

9. When the progress bar closes, close the Barcode Configuration utility.

Topic:
Resolving SpeechMike Button Issues

Problem

The SpeechMike or Foot Pedal operates intermittently after installing SpeechQ from the version 1.1.156.1100 (Service Pack 3) full installation CD.

Cause

The PSPUSBCT.DLL file (version 3.242.0.0) delivered in SpeechQ version 1.1.56.1100 (Service Pack 3) and version 1.1.57.1300 (Service Pack 4) is an older version than the file delivered in version 1.1.55.600 (Service Pack 2).

Solution

1. Download the PSPUSBCT3-286.zip from LNET.

2. Extract the files from the zipped folder.

    ✐ You can find the file in the Service and Support\Downloads\Patches\SpeechQ for Radiology folder.

3. Open the C :< Windows folder>\system32 folder.

4. Copy the current PSPUSBCT.DLL file version 3.242.0.0 and paste the copy in a backup folder.

5. Open the folder that contains the files you extracted from the PSPUSBCT3-286.zip file.

6. Copy the new PSPUSBCT.DLL file version 3.286.0.0 and paste the copy over the PSPUSBCT.DLL file version 3.242.0.0 in the C :< Windows folder>\system32 folder.

7. Test the SpeechMike for proper operation.

Topic:
Resolving Corrupt User Profiles

Problem

One of the messages below displays when the user attempts to login:

- "Error occurred during the creation of Radiology……Context. You cannot use recognition with this context"

- "Speech recognition data is missing, or is not synchronized yet. Speech recognition is unavailable, you can use digital dictation instead"

Cause

This message displays when the system detects a corrupt user profile. One or all of the three files that make up this portion of the user profile are corrupt or missing.

Solution

First, gather the information for the error and send it to Support. Follow the appropriate procedure from Technical Bulletin "Bug reporting for SpeechQ 006-01/06" to gather the information Support needs then follow the steps in the sections below to backup and repair the user's profile.

There are three places it is suggested that you find backup copies of the three user files:

- SpeechQ backup of the files—this is the easiest and most accessible option. However, if the SpeechQ backup has run since the user started experiencing the issue, these files may be corrupt. To use these files, follow the procedure outlined in *Replacing User Files From Backup* section.

- Hospital backup of the files—in this case, you need a copy of the backup immediately before the User started experiencing the issue. To use these files, follow the procedure outlined in the *Replacing User Files From Backup* section.

- Create a new user profile and use this test user's files to repair the existing user profile—this can be done if all else fails to work. This is a last resort because all adaptation information for the user will be lost and they will have to perform initial voice training again, unless the user's training wave files are available. Follow the steps in *Creating a New User Profile* and *Replacing User Files From Backup* sections below to create new files to use. Then follow procedures in the *Applying Training Files* section so the user will not have to complete initial training.

Replacing User Files From Backup

To replace the files of the user profile (.ARF, .ULM, and .ULX files), follow the steps below:

☠ Start by replacing, from backup, just the .ULM and .ULX files, and then test to see if the user can log in without an error. If that doesn't work replace the .ARF file as well.

To replace user files from backup, follow the steps below:

1. On the SpeechQ server, open SQL Server Enterprise Manager.

2. Select the **SpeechMagic** database.

3. Click **Tables**.

4. In the Tables window list, right-click the **BCFilesNames** table and click **Open Table > Query**. The window that opens displays SELECT * FROM [dbo].[BCFileNames] in the middle section.

5. Place cursor at end of [dbo].[BCFileNames] and press **Enter**.

6. Type *order by filenamekey* and click the exclamation point button in the toolbar at the top of the window to "RUN" the query. Results of the query display in the bottom pane of the query window.

7. Check the results for the following information:

- SRAcousticModel.User..res::English(US)::Microphone (high resolution) – where "res" is the SpeechQ Short Name of the user that is having the error or the test user you created. Make note of the data in the Filename, and ChangeIndex columns. EX. "arf\50_5.arf" and "5"

- SRLongTermLanguageModel.DictCtx..resContext_10000 5::ORIGINAL::res_1_ULM- again, where "res" is the SpeechQ Short Name of the user that is having the error. Make note of the data in the Filename, and ChangeIndex columns. EX. "ulm\55.ulm" and "1" or "ulm\55_15.ulm and "15"

- SRLongTermLexicon.DictCtx..resContext_100005::ORIGI NAL – again, where "res" is the SpeechQ Short Name of the user that is having the error. Make note of the data in the Filename, and ChangeIndex columns. EX. "ulx\53.ulx" and "1" or "ulx\53_34.ulx and "34" Note: the number "_100005" in the examples listed above will be different on different systems.

8. Using the information you obtain in step 7, open the **C:\Program Files\SpeechQ Server\SpeechMagic Server\PDATA** folder (where "C" = the drive on which SpeechQ has been installed) look in the ARF, ULM, and ULX folders, and locate the files noted above.

9. Open the folder that contains the SpeechQ backup files or Hospital backup files.

Ⓐ You can find the SpeechQ backup location information in the *SpeechQ System Administration* module. Click the **Backup** icon in the Backup Settings section to view the backup location. For example, C:\SpeechQ Backup.

10. Navigate to this folder containing the SpeechQ backup or Hospital backup, and then continue to the SpeechMagic\Pdata folder. For example, C:\SpeechQ Backup\SpeechMagic\Pdata.

11. Open the appropriate ARF, ULM, or ULX folders one at a time and do the following:

Ⓐ There will probably be a difference in one or more of the filenames noted above, such as "arf\50_23.arf" found listed in the database may be listed as "arf\50_22.arf" here.

⟹ Copy the appropriate file or the latest version of the file and paste it into **C:\Program Files\SpeechQ Server\SpeechMagic Server\PDATA\<folder>** (where "C"= the drive on which SpeechQ has been installed and "<folder>"= the appropriate folder (ARF, ULM, ULX)).

⟹ Rename the files that you pasted into the **C:\Program Files\SpeechQ Server\SpeechMagic Server\PDATA\ <folder>** to the sequence number plus 1 (+1) of the file name that is listed in the BCFileNames table. For example, if BCFilesNames table says that the ARF file is "50_23.arf "change the filename to "50_24.arf" etc… (all three of them).

⟹ Open SQL Server Enterprise Manager and change the **Filename** and **ChangeIndex** columns to match the filenames just renamed. For example, Change FileName column from "arf\50_23.arf" to "arf\50_24".arf and change the ChangeIndex column from "23" to "24". Repeat this for all three files.

12. Close SQL Server Enterprise Manager and then log in as the user that is having the issue and verify that the problem has been resolved.

Creating a New User Profile

☠ After creating a new user profile, the user that was experiencing the issue will have to perform initial voice training again from Report Station. If the user's initial voice training wave files are available, perform the steps in the *Applying Training Files* section to recover and apply the user's voice files to their user profile.

To create a new user profile, follow the steps below:

1. Open Workflow Administration and create a new test user.

2. Make a copy of this new test user's files (arf, ulm, ulx).

3. Rename the copies of the files to match the existing user's filenames; increase the **ChangeIndex** by two. For example, copy of the new user's .arf file is "Copy of 147.arf" and existing user file is "50_23.arf". Rename "Copy of 147.arf" to "50_25.arf") Repeat this step for all three files (arf, ulm, ulx).

4. Make necessary changes to the existing users settings in the database. Change the **filename** and **ChangeIndex** columns to match filenames just renamed.

5. Deactivate the test user account so no one can log in as this test user.

6. Log on to Report Station as the user experiencing the issue to verify the issue has been resolved.

7. If resolved, log out and have the user that was experiencing the issue log on and perform initial voice training or apply the user's training files.

✍ Even if the user performs initial voice training and/or you can apply training files, all context adaptation information for the user will be lost.

Applying Training Files

If you must create a new user profile for an existing user or replace the files for an existing user with the files from a new "test" user, it may be possible to retrain the system for the user without requiring them to perform initial voice training. You can retrain the system to the user's voice by applying the user's training files.

1. Open the folders on each client station until you find the folder for the existing user. For example, "res English(US) Default" – where "res" = the user's login or Short Name from SpeechQ.

2. Open the **C:\Documents and Settings\All Users\Application Data\Speech\Client\TempIA\waves** folder.

♤ This may be a good time to go ahead and copy all folders found in this folder here to the server. If the server already has a "Support" folder create another folder under Support to hold these training wave files. For example; \support\initialtraining.

3. The client station that contains the folder for the existing user is the station the user used for completing initial voice training the first time.

4. On the client station, or a client station this folder is copied to, log on to Report Station as the existing user and click **Settings > Initial Training** then the appropriate item from the list such as "Introduction Welcome". When the Initial Training – Welcome dialog box displays, the Start Processing button should be available.

♂ If the user's information is copied to another station, make sure it is copied to the path stated above in step 2.

5. Click **Start Processing** to perform the initial training for the user.

Topic:
Resolving Report Station Locking, Slow Response to Voice Commands, and Poor Recognition Rates

Problem

The customer may experience many different and assorted issues with SpeechQ client PC's running any SQR client program. Such as:

- Report Station locks up or stops responding.

- PC lags or is slow to respond to voice commands.

- Possible issues with recognition rates at the site as well.

Cause

Hyper-Threading is on / enabled in the system BIOS on the PC.

Solution

Enter the system BIOS and verify Hyper-Threading is off / disabled on all SpeechQ clients.

☠ Hyper-Threading should be disabled for all PC's running any SpeechQ client application.

HP / Compaq

To disable Hyper-Threading on HP and Compaq workstation, follow the steps below:

1. At startup, press **F10** to enter system BIOS.

2. Select **Advanced Menu** > **Device Options**.

3. Select **Hyper-Threading** and disable this option.

4. Press **F10** to accept.

5. Select the **File** menu and select **Save Changes and Exit**.

Dell

To disable Hyper-Threading on Dell workstations, follow the steps below:

1. At startup, press **F2** to enter system BIOS.

2. Go to the **Performance Menu**.

3. Disable **Hyper-Threading**.

4. Save changes and exit.

Topic:
Resolving Issues with Saving Word Documents

Problem

The Report Station, work area (main) window shows "Saving Word document – please wait" and never goes away. Clicking the small "X" in the top right hand corner closes the window (not the application "X").

Or Report Station seems to "freeze" or lockup when the doctor/transcriptionist has a lot of reports in the work list and they are attempting to process them (dictate/review/sign/transcribe) in succession.

Cause

SpeechQ reuses the report form, and instead of closing it, simply hides it between reports being opened which is designed to speed up report creation and may be contributing to the issue.

Solution

The following procedure may help with this issue and should be performed on all client workstations running Report Station.

To resolve issues with saving Word documents, follow the steps below:

1. Find the **ReportStation.exe.ini** file found in the **C:\Program Files\SpeechQ Client** folder(where "C" represents the drive on which the SpeechQ Client application was installed).

2. Open the **ReportStation.exe.ini** file with a text editor.

3. Locate the **ReuseReportForm** line and change the setting to *0*.

✎ If this line is not found in the file, you can add it by entering *ReuseReportForm = 0.*

🔔 Another setting that may need to be checked and/or added is AllowMultipledoc = 0, but this should be changed or added only after consulting with the site, the doctors, and transcriptionists, since it will prevent them from being able to open multiple reports at the same time.

Topic:
Resolving Unspecified Errors After Reinstalling Report Station

Problem

After reinstalling Report Station, the user receives the following error message:

```
SpeechQ - Error - 2006.05.08, 13:59:15:73237
   ❌   An unspecified serious error occurred in the application.
        Details:
        Object reference not set to an instance of an object.

        CLIENT - FRIEDMAN, JOSEPH (JFRIE2) (542624) - 76958

              [    OK    ]    [  Hide details  ]

   System.NullReferenceException: Object reference not set to an
   instance of an object.
      at
   SpeechStar.SpeechStarClient.Notification.SDNotificationHandler.remov
   eMessage(SDNotificationBase message)
      at
```

Cause

This error was caused by installing the report station software from the local PC and not from the server. When installing from the server, it installs the SpeechMagic software properly. If you install from the local workstation (not from the full install CD) SpeechMagic does not get installed.

Solution

To correct this error, uninstall Report Station, then install it properly from the software in the install folder on the server.

Module 6:
Reporting Defects

Module Description

This module covers defect reporting procedures and requirements for SpeechQ. It covers procedures for gathering required information and identifying issue types. In addition, this module also covers enabling and disabling logging, gathering files, and reporting issues.

Module Performance Objectives

After completing this module, you will be able to:

- gather required information and identify issue types.

- enable and disable logging.

- gather files.

- report issues.

Module Prerequisites

To understand the concepts and perform the tasks in this module, you should have completed the following courses:

- SpeechQ Introduction

- Speech Recognition Introduction

- SpeechQ Workflows

Topic:
Gathering Required Information and Identifying Issue Types

The issue type determines the procedures you follow and items that you gather for defect reporting. All procedures required for each issue type are described in detail in the topics that follow. However, there is some information that is always needed for any SpeechQ error/issue:

- Steps that were done which lead to the issue

- Screenshots of error message(s)

- Information as to whether the issue is reproducible (always, sometimes, intermittent).

- Report ID of the report affected

- Copy of the file ReportStation.exe.ini which is found in the x:\Program Files\SpeechQ Client folder. Where "x"= the drive on which Report Station was installed.

- Information as to whether if the system is integrated with a PACS system, a record of which options are enabled (checked) and which are not enabled (not checked) on the PACS menu within the Report Station application.

- Completed Issue Report document. This file can be downloaded from LNET (Service and Support, Downloads, Patches, SpeechQ for Radiology).

Additional information which will be helpful:

- Name of the operating system installed on the computer experiencing the issue.

- Version of Microsoft Word being used.

✍ When the issue is a recognition problem be sure to include, along with the traces, the report files as well.

📖 See the procedure called *Finding Report Files* included in this manual.

✍ The sections in this topic list the procedures for reporting each issue type.

Reporting Reproducible Issues

For issues which are reproducible, do the following:

- Enable trace function logging and max logging.

- Start Report Station and reproduce the issue (capture screenshots, if applicable).

- Enable trace file logging and gather the trace file logs.

- Disable trace file logging and max logging and return to normal logging.

- Report the issue to Support.

Reporting Frequent Intermittent Issues

For intermittent issues that occur very often, do the following:

- Enable max logging.

- Start Report Station and reproduce the issue (capture screenshots, if applicable), if possible. If not, leave max logging active until the issue occurs again. When the issue occurs, have the customer contact you and give you the date and time the issue reoccurred.

- Enable trace file logs and gather the trace file logs.

- Disable trace file logging and max logging and return to normal logging.

- Report the issue to Support.

Reporting Rare Intermittent Issue

If the issue is intermittent and does not reoccur very often, do the following:

- Ask the customer for the date and time the issue occurred.

- Enable trace file logging and gather the trace file logs.

- Disable trace file logging and return to normal logging.

- Report the issue to Support.

Reporting Winword Issues (Reproducible)

For Microsoft Word issues that are reproducible, do the following:

- Enable trace function logging and Winword logging.

- Start Report Station and reproduce the issue (capture screenshots, if applicable).

- Enable trace file logging and gather the trace file logs.

- Disable trace file logging and return to normal logging.

- Report the issue to Support.

Reporting Winword Issues (Not Reproducible but Frequent)

For Microsoft Word issues that are not reproducible but reoccur often, do the following:

- Enable Winword logging.

- Start Report Station and reproduce the issue (capture screenshots, if applicable), if possible. If not, leave Winword logging active until the issue occurs again. When the issue occurs again, have the customer contact you and give you the Date and Time the issue reoccurred.

- Enable trace file logging and gather the trace file logs.

- Disable trace file logging and return to normal logging.

- Report the issue to Support.

Reporting Workflow Related Issues

Workflow related issues include issues such as reports being sent within SpeechQ to the wrong place in the workflow. For example, a transcriptionist edits a report for a resident physician and sends it for approval, but instead of the report getting sent to the attending physician, it goes to the resident.

For workflow related issues, do the following:

- Gather workflow type data.

- Enable trace file logging and gather the trace file logs.

- Disable trace file logging and return to normal logging.

- Report the issue to Support.

Reporting Command Recognition Issues

For command recognition issues do the following:

- Enable max logging.

- Start Report Station and reproduce the issue (capture screenshots, if applicable), if possible. If not, leave max logging active until the issue occurs again. When the issue occurs, have the customer contact you and give you the date and time the issue reoccurred.

- Enable trace file logs and gather the trace file logs.

- Disable trace file logging and max logging and return to normal logging.

- Report the issue to Support.

Reporting PACS Integration and Order/Exam # Not Found Issues

PACS integration and "Order/Exam not found" issues are found in systems integrated with a PACS system, and the order/exam number does not appear in the SpeechQ database. First verify that the order/exam should be in the SpeechQ database. With some PACS systems, the users must completely enter (finish) the order/exam data into the PACS system before it displays in the SpeechQ database.

If the order/exam should be in the SpeechQ database but does not display, do the following:

- Enable trace file logs and gather the trace file logs.

- Disable trace file logging and max logging and return to normal logging.

- Report the issue to Support.

Reporting Workflow Administration Issues

For any Workflow Administration issues, do the following:

- On the computer where Workflow Admin is installed and on which the issue occurred, open the C:\Documents and Settings\All Users\Application Data\Speech\WFAdmin\Trace folder and copy and zip all the trace/log files that have a date stamp that matches the date the issue occurred.

- Gather the trace log files.

- Report the issue to Support.

Reporting SpeechQ Server Issues

For any server issue, do the following:

- Enable trace file logs and gather the trace file logs.

- Disable trace file logging and max logging and return to normal logging.

- Report the issue to Support.

Reporting Dictation Recognition Issues

For dictation recognition issues, the report ID's for some of the reports that have experienced the recognition issues will need to be noted and the reports themselves will need to be included in the files sent to Support.

To find the report, look on the workstation on which the report was created or the SpeechQ Server and do the following:

1. Open the C:\Documents and Settings\All Users\Application Data\Speech\Client\Files\00\00\00 folder (if on the Server go to C:\Program Files\SpeechQ Server\Data\Files\00\00\00\...) find the folder(s) that contain the ID's noted above.

⌂ For example, if looking for Report ID 7758, open folder "77"; then this folder would contain many more folders all starting with "000000". For this example, you would copy folder "0000007758" to a temporary folder.

2. Once all the folders have been copied, zip the folders/files and then move the zipped file(s) to a folder Support can access. For example, x:\Support\WorkStationName\ Date\Issue); where "x" = the drive on the server that has the most free space WorkStationName = the name of the work station that is experiencing the issue Date = the date the issue occurred, such as 2006_01_23, and Issue = the issue itself, such as WSLockup.

3. Make sure to include the Report ID's noted above in the Speech Q Issue Report that you send to Support.

⌂ You can download the SpeechQ Issue Report document from LNET (Service and Support > Downloads > Patches > SpeechQ for Radiology).

Gathering User Speech Recognition Data

For dictation recognition issues, you must also gather the speech recognition data for the user that experienced the issue. This includes the users' .ARF, .ULM, and .ULX files.

To gather user speech recognition data, do the following:

1. On the SpeechQ server, open SQL Server Enterprise Manager.

2. Select the **SpeechMagic** database.

3. Double-click **Tables**.

4. Right-click the **BCFilesNames** table and click **Open Table > Query**. In the window that opens you should see a middle section display SELECT * FROM [dbo].[BCFileNames].

5. Click at the end of **[dbo].[BCFileNames]** and press **Enter**.

6. Enter *order by filenamekey* and click the **Run** button on the toolbar. The results of the query display in the bottom pane of the query window.

7. In the **FileNameKey** column of the results, locate the following:

    ⇒ *SRAcousticModel.User..res::English(US)::Microphone (high resolution)* – where "res" is the SpeechQ Short Name (which you can find by clicking **Users** in Workflow Adminstration and then by clicking the user, where the short name will display in the user's properties pane) of the user that is having the issue. Make note of the data in the Filename column. EX. "arf\50_5.arf"

    ⇒ *SRLongTermLanguageModel.DictCtx..resContext_100005::ORIG INAL::res_1_ULM-* again, where "res" is the SpeechQ Short Name of the user that is having the issue and "100005" is some number (all numbers should be the same on each row). Make note of the data in the Filename column. EX. "ulm\55.ulm" or "ulm\55_15.ulm

    ⇒ SRLongTermLexicon.DictCtx..resContext_100005::ORIGINA L – again, where "res" is the SpeechQ Short Name of the user that is having the issue and "100005" is some number (all numbers should be the same on each row but most likely will not be this number). Make note of the data in the Filename column. EX. "ulx\53.ulx" or "ulx\53_34.ulx

8. Open the C:\Program Files\SpeechQ Server\SpeechMagic Server\PDATA folder (where "C" is the drive the SpeechQ Server is installed on).

9. Open each of the appropriate folders (arf, ulm, and ulx) and copy the files noted in step 7 to a temp folder.

10. When you finish copying the files, add them to a zip folder and name the file using some or all of the user's name.

11. Move the zipped file(s) to the SpeechQ Server and place them in a folder Support can access. For example, x:\Support\WorkStationName\ Date\Issue) where "x" = the drive on the server that has the most free space, "WorkStationName" = the name of the work station that is experiencing the issue, "Date" = the date the issue occurred (Ex. 2006_01_23) and "Issue" = the issue itself (ex. WSLockup).

12. Complete the SpeechQ Issue Report document and place along with any screenshots of the error, and other files requested, into the appropriate "issue" folder discussed above in step 11.

✐ You can download the SpeechQ Issue Report document from LNET (Service and Support > Downloads > Patches > SpeechQ for Radiology).

13. Contact Support and let them know in which folder they can find the files, documents, and other items related to the issue.

Topic:
Enabling and Disabling Logging

Enabling various types of logging captures information that assists in troubleshooting and resolving product defects. Logs can provide a snapshot of activity at the time the error or defect occurred.

Enabling Trace Function Logging

To enable the Trace Function, do the following:

1. On the Client PC, exit Report Station and open the **ReportStation.exe.ini** file.

✎ You can find ReportStation.exe.ini in the x:\Program Files\SpeechQ Client folder; where "x"= the drive on which Report Station was installed.

2. Find the **Trace Function** setting (should be set to *0*) and change this setting to *1*

3. Save and close the file.

Disabling Trace Function Logging

To disable trace function logging, do the following:

1. On the Client PC, shut down Report Station, and then open the file **ReportStation.exe.ini**.

✎ You can find ReportStation.exe.ini in the x:\Program Files\SpeechQ Client folder; where "x"= the drive on which Report Station was installed.

2. Find the **Trace Function** setting (should be set to *1*) and change this setting to *0*.

3. Save and close the file.

Enabling Max Logging

To enable max logging, do the following:

1. On the Client PC, shut down Report Station, then find the **logconfig.ini** file in the C:\Documents and Settings\All Users\Application Data\Speech\Client folder.

2. Rename **logconfig.ini** to *NORMAL_logconfig.ini*.

3. Copy the **MAX_logconfig.ini** file to the folder specified above in step 1.

♻ The **MAX_logconfig.ini** file can be downloaded from LNET (Service and Support, Downloads, Patches, SpeechQ for Radiology) if you do not already have a copy of it.

4. Rename **MAX_logconfig.ini** to *logconfig.ini*.

☠ Only enable max logging or Winword logging for as long as needed to have the issue reoccur. The trace/log files will continue to increase in size and number, which can result in additional and/or new issues.

Enabling Normal Logging

To enable normal logging, do the following:

1. Exit Report Station and find the **logconfig.ini** file in the C:\Documents and Settings\All Users\Application Data\Speech\Client folder and rename this file to *MAX_logconfig.ini* or *WINWORD_logconfig.ini* depending on which logging function from which you are returning and the original name of the file.

2. Rename the **NORMAL_logconfig.ini** file to *logconfig.ini*.

Enabling Winword Logging

To enable WinWord logging, do the following:

1. Find the **logconfig.ini** file, found in the C:\Documents and Settings\All Users\Application Data\Speech\Client folder and rename this file to *NORMAL_logconfig.ini*.

2. Copy the WINWORD_logconfig.ini file into the folder specified above in step 1.

3. This file can be downloaded from LNET (Service and Support, Downloads, Patches, SpeechQ for Radiology) if you do not already have a copy of it.

4. Rename **WINWORD_logconfig.ini** to *logconfig.ini*.

☠ Only enable max logging or Winword logging for as long as needed to have the issue reoccur. The trace/log files will continue to increase in size and number, which can result in additional and/or new issues.

Topic:
Gathering Files

SpeechQ creates and stores files that can provide valuable troubleshooting information. These files provide information about SpeechQ functions that were happening at the time the error occurred.

Gathering Workflow Type Data

If the error is related to a workflow issue, you must provide Support with data regarding the report source that corresponds to the action that was taking place when the issue occurred.

To gather workflow type data, do the following:

1. Start Workflow Administration.

2. Click the **Advanced** bar and click **Report Sources**.

3. Select the report source that corresponds to the action that was taking place when the issue arose. (For example, in the above example the report source "Transcription for Attending" would be selected).

4. Click the **Workflow Types** tab in the pane below the report Sources. This tab displays the workflow type for that report source under the column named **Workflow type**.

5. Make note of the listed workflow type and click the **Workflow Types** icon on the left on the **Advanced** bar.

6. In the Workflow types pane, click the Workflow type noted from the Report Source page, and then click the **Export** button. A File Save dialogbox opens.

7. Save the file (xml file) to a folder and add the file to a zip file.

8. Move the zipped file(s) to the SpeechQ Server and place them in a folder Support can access. For example, x:\Support\WorkStationName\ Date\Issue); where "x" = the drive on the server that has the most free space "WorkStationName" = the name of the work station that is experiencing the issue, "Date" = the date the issue occurred (Ex. 2006_01_23), and "Issue" = the issue itself (ex. WSLockup).

Gathering Trace/Log Files

After you enable trace log files and log files, you must gather them and send them to support.

To gather trace/log files, do the following:

1. On the SpeechQ Client PC, open the C:\Documents and Settings\All Users\Application Data\Speech\Client\Trace folder and copy/zip all the data files whose Date/Time stamp equals the date the issue occurred.

2. Name the zip file using a naming convention that identifies the issue. For example, WorkStationNameLockUp.zip.

3. On the SpeechQ Server open the x:\Program Files\SpeechQ Server\Data\Trace folder (where "x"=drive SpeechQ Server is installed) and copy/zip all the files with a date stamp that matches the date the issue occurred.

4. Copy/zip any files with a date stamp that matches the date the issue occurred from the log folder as well; x:\Program Files\SpeechQ Server\Data\Log.

5. Move the zipped file(s) to the SpeechQ Server into a folder Support can access: (EX. x:\Support\WorkStationName\ Date\Issue); where "x" = the drive on the server that has the most free space "WorkStationName" = the name of the work station that is experiencing the issue, "Date" = the date the issue occurred (Ex. 2006_01_23), and "Issue" = the issue itself (Ex. WSLockup).

Finding Report Files

Report files to include with the gathered trace files for a recognition problem are stored on the SpeechQ server in the <installation drive>:\Program Files\SpeechQ Server\Data\Files folder. You can find the report in the folder named for the report ID. For example, if you need report ID 8341, think of it as a 10 digit number, 0000008341. This report will be located in <installation drive>:\Program Files\SpeechQ Server\Data\Files\00\00\00\83\0000008341. Copy and zip the 0000008341 folder.

Topic:
Reporting Issues

To report the issue to Support, do the following:

1. Complete the SpeechQ Issue Report document and place any screenshots of the error, and other files requested in the document, into the appropriate "issue" folder discussed in the *Gathering Trace/Log Files* section.

✎ You can download the SpeechQ Issue Report document from LNET (Service and Support > Downloads > Patches > SpeechQ for Radiology).

2. Contact Support and let them know in which folder, the files, documents, etc. are located on the server.

Locating INI Files

Support may ask for a copy of an INI file. Below is a list of .INI files and where they are located.

Locating INI Files on the SpeechQ Client
C:\Program Files\SpeechQ Client contains the following files:

- DataDefinitionTool.exe.ini

- PatientAdministrationClient.exe.ini (only without RIS integration)

- ProcessDefinitionTool.exe.ini

- ReportStation.exe.ini

- SDPACSServer.dll.ini (only with PACS desktop integration)

- SystemAdministration.exe.ini

- WorkflowAdministration.exe.ini

C:\Program Files\SpeechQ Client\PatcherClient contains the following file:

- SQPatcher.Client.exe.ini

Locating INI Files on the SpeechQ Server
C:\Program Files\SpeechQ Server contains the following files:

- SQEngineService.exe.ini

- WorkflowEngine.exe.ini

- SpeechLink.Service.exe.ini (only with RIS integration)

✎ In all cases in this section, "C" in the paths given assumes the SpeechQ Client and SpeechQ Server software was installed on the C drive. The paths at the account may be different, but the difference should be limited to the drive letter.

Locating Log/Trace Files, Report Files, Auto-texts, and Templates

The following table displays a general list of log file locations:

Log File	Location
Server activity log	C:\Program Files\SpeechQ Server\Data\Log
Server Traces	C:\Program Files\SpeechQ Server\Data\Trace
Server job (report) files	C:\Program Files\SpeechQ Server\Data\Files\00\00\00\…
Auto-texts	C:\Program Files\SpeechQ Server\Data\Macros
Worktype templates	C:\Program Files\SpeechQ Server\Data\Templates

Log File	Location
Report Station user preferences	C:\Documents and Settings\All Users\Application Data\Speech\Client\UserPrefs
Report Station local DB cache	C:\Documents and Settings\All Users\Application Data\Speech\Client\DbCache
Report Station job (report) files	C:\Documents and Settings\All Users\Application Data\Speech\Client\Files\00\00\00\…
Report Station traces	C:\Documents and Settings\All Users\Application Data\Speech\Client\Trace
PACS integration traces	C:\Documents and Settings\All Users\Application Data\Speech\PACS_SERVER\Trace
Process Definition tool traces	C:\Documents and Settings\All Users\Application Data\Speech\PDTool\Trace
System Administration module traces	C:\Documents and Settings\All Users\Application Data\Speech\SysAdmin\Trace
Workflow Administration traces	C:\Documents and Settings\All Users\Application Data\Speech\WFAdmin\Trace

✍ In all cases in this section, "C" in the paths given assumes the SpeechQ Client and SpeechQ Server software was installed on the C drive. The paths at the account may be different, but the difference should be limited to the drive letter.

Appendix:
Troubleshooting Audio Problems

The topics in this section provide troubleshooting information on your audio system and details on messages which may be displayed in the Audio Wizard.

Troubleshooting Poor Sound Quality

If you have problems with your sound quality, you may need to run your Audio Wizard again. If you install a new sound card, audio device and/or microphone, you should always run the Audio Wizard again to ensure that this new equipment provides a sound quality which is good enough for speech recognition.

Troubleshooting New Hardware

Newly added hardware can also conflict with your sound quality. If you recently added a modem, scanner, etc. temporarily disconnect the device to check if your audio system functions properly again. If you have problems, contact the manufacturer for assistance in configuring the device so that it does not conflict with your audio system.

Troubleshooting the Audio Wizard

If the Audio Wizard does not work and the problem cannot be solved, send the following information to Philips Speech Processing Support:

- The name and model of your microphone.

- The name and model of your sound card.

- The name and model of your computer.

- The type of your processor (Pentium, Pentium II, etc.).

- The operating system you are working with (Windows 2000, Windows NT 4.0, Windows XP), the operating system language, version and/or Service Pack if you have any installed.

- How much free disk space on your hard disk you are working with.

- How many MB RAM you are working with.

- Whether the audio system can be used for playback.

- Whether the audio system can be used for recording.

- If available, the text of the error message.

- Data in the SmAudWiz.LOG file in <SpeechMagic folder>\log\<PC name>. You can locate this in the SpeechMagic Workstation folder.

Troubleshooting SpeechMike Errors

Your SpeechMike may not be working for one of the following reasons:

- There may be no space left to plug in your SpeechMike. Check to see if all of your cable jacks are already occupied.

- Some notebook computers do not observe the industrial standard for COM ports. The output voltage may be too low to handle SpeechMike's preamplifier.

- Some notebook computers have MIC IN/LINE IN jacks that do not work with 3.5 mm stereo plugs.

- Your SpeechMike may be faulty, check with the dealer.

If you still cannot solve the problem, contact Philips Speech Processing Support for more information.

Troubleshooting Sound Quality Poor Usable for Speech Recognition Errors

If sound quality is poor and not useable for speech recognition, your sound system is not good enough for speech recognition.

- Repeat the recording, speak loudly and clearly. Point the microphone toward your mouth, so that you are talking into the side of the microphone. If you are using a headset microphone, adjust the arm so that it is rotated to face your mouth.

- Begin speaking immediately after you have pressed the **Record** button.

- Depending on which sound card you have installed, you may not be able to disable the Automatic Gain Control (AGC) in the audio mixer manually. Double-click the volume icon on your Windows taskbar, select **Options > Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and disable **AGC** if available.

- Some notebook sound cards will have more internal noise if the power lead is connected to the power mains to ground the connection. Microphones built into notebook computers and microphones that come with sound cards are generally poor, have an uneven response, and are over-sensitive to background noise.

- If you are using a notebook with an external microphone, make sure the internal microphone is disabled.

- Try to reduce the background noise and dictate the text again.

- Increase the amplifier manually. Depending on which sound card you have installed, you may be able to disable the option **Mic +20dB**. Double-click the volume icon on your Windows taskbar, choose **Options > Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and disable **Mic +20dB** if available. Or look in your Windows Control Panel for a sound card or microphone boost icon.

- Try another microphone. A USB microphone is a good option as it does not need a sound card.

Some sound cards have a dedicated icon in the Windows Control Panel. There may be a Mic Boost option and a Volume slider, so experiment with this level. Make sure you understand the difference between Playback volume (usually just called volume) and Recording volume.

Troubleshooting Sound Quality Poor - Useable for Speech Recognition

If sound quality is poor and useable for speech recognition Your sound system is not very good, but you can use it for speech recognition.

- Repeat, speak loudly and clearly.

- Bring the microphone closer to your mouth.

- Begin speaking immediately after you have pressed the **Record** button.

- Depending on which sound card you have installed, you may be able to disable the Automatic Gain Control (AGC) in the audio mixer manually. Double-click the volume icon on your Windows taskbar, select **Options > Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and disable **AGC** if available.

- Try to reduce the background noise and dictate the text again.

- Increase the amplifier manually. Depending on which sound card you have installed, you may be able to disable the option Mic +20dB. Double-click the volume icon on your Windows taskbar, select **Options > Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and disable **Mic +20dB** if available. Or look in your Windows Control Panel for a sound card or microphone boost icon.

- Try another microphone.

Troubleshooting Input Signal Problems

If you receive the "No Input Signal Detected" message:

- Verify that your microphone is plugged into the MIC IN jack, which is usually located at the back of your computer. If the jack panel of the sound card is not well marked, refer to the sound card instruction manual to determine the correct input jack. If the microphone has an ON/OFF switch, make sure that it is set to the ON position. The microphone cable should be connected to the MIC IN jack and not in the LINE OUT/SPK OUT jack.

- If you are using a SpeechMike or SpeechMike Pro, check to see if the trackball is working properly. When this does not function, the microphone will not function either. To solve this problem, restart SpeechQ Workstation Setup and reinstall the SpeechMike driver (**Control Devices** page).

- If your microphone is connected properly and works, check if the microphone is selected in the audio mixer, which is available as an icon on your Windows taskbar. You may have your MIC IN/LINE IN muted. In this case the computer will not be able to detect any input sound. Open the audio mixer and select **Options > Properties**. Select **Recording** and click **OK**. Now check if the **microphone** check box is activated (selected) or not (muted). Check the same for the **master record**.

- If you have a passive microphone (not active, like SpeechMike) try to enable the option **Mic +20dB**. This option may not be available depending on which sound card you have installed. Double-click the volume icon on your Windows taskbar, choose **Options > Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and enable **Mic +20dB** if available. Or look in your Windows Control Panel for a sound card or microphone boost icon.

- If your microphone has a converter, increase the input signal by removing the converter.

- Check if you have chosen the correct sound device in Windows: **Start** > **Control Panel > Sounds and Devices > Audio** for playback and recording.

Troubleshooting Distortion Level Too High - Not Useable for Speech Recognition Errors

If the distortion level is too high, you cannot run speech recognition.

- Repeat, speak clearly and continuously. Point the microphone towards your mouth, so that you are talking into the side of the microphone. If you are using a headset microphone, adjust the arm so that it is rotated to face your mouth.

- The MIC IN signal may be overdriven, try to decrease the amplifier manually. Depending on which sound card you have installed, you may be able to disable the option **Mic +20dB**. Double-click the volume icon on your Windows taskbar, select **Options >Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and disable **Mic +20dB** if available. Or look in your Windows Control Panel for a sound card or microphone boost icon.

Disabling this option is mandatory for the SpeechMike.

Other microphones may also need a signal reducer to decrease the input signal.

- Some notebook sound cards will have more internal noise if the power lead is connected to the power mains to ground the connection. Try to re-run the Audio Wizard with disconnected power mains.

- Microphones built into notebook computers and microphones that come with sound cards are generally poor, have an uneven response, and are over-sensitive to background noise.

- If you are using a notebook with an external microphone, make sure the internal microphone is disabled.

- Try to use the LINE IN jack instead of the MIC IN jack: Connect your microphone to the LINE IN jack, which is usually located at the back of your computer. If the jack panel of the sound card is not well marked, refer to the sound card instruction manual to determine the correct input jack.

    - No input signal/sound quality poor - increase the recording level (slider).
    - Distortion - decrease the recording level.
- Retry until you get a good result.

Do not sit too close to the monitor. Many monitors produce electrical noise throughout the speech band (fluorescent lights can also have the same effect). A poorly shielded microphone will corrupt your voice profile. If you have an earphone or speakers, you may even be able to hear a buzzing.

Troubleshooting Distortion Level Too High - Useable for Speech Recognition Errors

The distortion level is very high, but your sound system can be used for speech recognition.

- Repeat. Try speaking more softly and holding the microphone further away from your mouth.

- Depending on which sound card you have installed, you may be able to disable the Automatic Gain Control (AGC) in the audio mixer manually. Double-click the volume icon on your Windows taskbar, select **Options > Properties**, select **Recording**, enable **Options > Advanced**, click **Advanced**, and disable **AGC** if available.

Troubleshooting Audio Data Not Useable Errors

If the sound quality is inadequate.

- Repeat. Speak clearly and continuously.

- Hold the microphone closer to your mouth.

- Begin speaking immediately after you have pressed the Record button.

- Depending on which sound card you have installed, you may not be able to disable the Automatic Gain Control (AGC) in the audio mixer manually. Double-click the volume icon on your Windows taskbar, choose **Options/Properties**, select **Recording**, enable **Options/Advanced**, click **Advanced**, and disable **AGC** if available.

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