



Nuance Speech Products

# **Installing Speech Server**

## Notice

Nuance Speech Products  
*Installing Speech Server*

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# Contents

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Installation procedure .....	5
Software requirements .....	5
Required accounts for installing, running, and stopping .....	6
Installation order for Nuance speech products .....	6
Supported operating systems .....	6
Licensing requirements .....	7
Hardware requirements .....	7
Installing on Linux .....	7
Installation paths on Linux .....	7
Disabling the firewall .....	8
Upgrading Nuance Speech Server .....	9
Uninstalling previous releases of Nuance Core Services .....	9
Installing the sample client on Linux (recommended) .....	9
Using MRCP waveform logging on Linux .....	9
Installing the server software on Linux (required) .....	10
Uninstalling the Linux software .....	10
Installing on Windows .....	10
Installation paths on Windows .....	10
Disabling the firewall .....	11
Upgrading Nuance Speech Server .....	11
Uninstalling previous releases of Nuance Core Services on Windows .....	11
Installing the sample client on Windows (recommended) .....	11
Using MRCP waveform logging on Windows .....	11
Installing the server software on Windows (required) .....	12
Running a silent installation on Windows (optional) .....	12
Uninstalling the Windows software .....	12
Configuring the system .....	13
Installing Recognizer or Vocalizer after Speech Server .....	14
Starting and testing Speech Server .....	17
Linux starting and stopping .....	17
Runlevel .....	18
Windows starting and stopping .....	18
Starting Speech Server from the command line .....	19
Testing installations with the sample application .....	20

Testing essential connectivity and recognition .....	20
Testing text-to-speech .....	21
Running the sample client application .....	21
Troubleshooting tips .....	22
Using Wireshark to analyze messages .....	22
Problems running the installer .....	22
Windows service fails to start .....	22
Speech Server fails to start because of missing ordinal .....	22
Client cannot start a session .....	23
Bad configuration .....	23
Recognizer or Vocalizer resources are unavailable .....	23
Text-to-speech requests fail .....	23
Server appears to ignore a message sent using client .....	23
Loopback address returned at session start .....	23
Troubleshooting with Nuance technical support .....	24

# Installation procedure

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This procedure includes Nuance® Speech Server installation procedures for client and server hosts. Nuance recommends installing Speech Server and MRCP clients on separate hosts, and this guide assumes one server and one client machine. Having two hosts improves troubleshooting capabilities (for example, to make statistical evaluations of RTP-packages carrying audio data).

Here are the basic steps:

- 1 Required. Ensure that the client and server meet the minimum hardware and software requirements. See [Software requirements](#).
- 2 Recommended. Before installing Speech Server, install or update the Nuance® Recognizer and Nuance® Vocalizer™ (if used) products. For supported versions, see the *Nuance Speech Server Release Notes*.
- 3 Recommended. Install MRCP client software. Nuance provides a sample MRCP client to test your Speech Server installation and to provide examples of how to write scripts. Do not use the sample client in a production environment.

For Windows, see [Installing the sample client on Windows \(recommended\)](#)

For Linux, see [Installing the sample client on Linux \(recommended\)](#).

- 4 Required. Install the server software. See [Installing on Windows](#) or [Installing on Linux](#).
- 5 Required. Configure the system for communications across products. See [Configuring the system](#).
- 6 Recommended. Test the default system configuration. See [Testing installations with the sample application](#).
- 7 Optional. Change the default configuration. You probably need to configure your particular deployment environment. For more information on system configuration, see *Configuring Nuance Speech Server*.

## Software requirements

Nuance Speech Server operates with the Vocalizer text-to-speech engine and Nuance Recognizer. The size of the required system depends on the range and type of recognitions the server performs.

The Speech Server software adds a maximum of 10–15% to the CPU usage in addition to the recognizer and/or text-to-speech engine requirements. For information on performance and memory usage, and guidelines for system sizing, see *Planning to Install and Operate Nuance Speech Products*.

For networking, Nuance speech products support HTTP 1.1 and HTTPS.

## Required accounts for installing, running, and stopping

To install or remove Nuance speech products on Windows, you must be logged in as Administrator. To run or stop Nuance products, you need an account with proper rights to directory `NUANCE_DATA_DIR` and subdirectories: modify, read, write. This account can be the user Administrator, a user in the group Administrators, or a standard user with these rights for the folder.

To install or remove Nuance speech products on Linux, you must be root or a “sudoer.” Processes can run under any user member of group “nuance.”

**Note:** If you are installing Speech Server and Recognizer instances on different hosts, those hosts *must* use the same operating system. If you install them on different operating systems, this causes many problems.

**Note:** When using starting scripts provided by Nuance, processes (for example, `Speech_Server/server/start` or `/etc/init.d/nuance-licmgr`) are started as the nuance user.

## Installation order for Nuance speech products

There is no required order of installation for Nuance speech products. Each product installs separately, and ships with its own installation instructions.

When installing Nuance Speech Server on the same host as Nuance Recognizer or Nuance Vocalizer, *it is best to install the Speech Server last*. Doing this eliminates configuration steps during the procedure. For information on installing Recognizer after you have installed Speech Server, see [Installing Recognizer or Vocalizer after Speech Server](#).

Required. Nuance Speech Server requires at least one of the following:

- Nuance Recognizer (and a language). Can be installed on any host in your network.  
**Note:** To have Recognizer perform endpointing and to have the Speech Server installer automate configuration for use with Recognizer, Recognizer must also be installed on the same host as Speech Server.
- Nuance Vocalizer (and a voice). Must be installed on the same host as Speech Server.

Optional. Install the Nuance Management Station to control your speech system. The Management Station is typically installed on its own host.

Optional. Install other Nuance speech products, such as Nuance Dialog Modules, Nuance Application Reporting, and others.

## Supported operating systems

Speech Server is a 32-bit process that runs on a 32- or 64-bit operating system.

This product runs on Linux and Windows. You can run these operating systems on VMware. When designing your system, anticipate more CPU usage for virtual environments. Do not use nested VMware systems. Please see the *Release Notes* for supported versions.

Nuance currently tests and supports this product on hosts set to the en-US locale. Running on other locales might affect recognition accuracy and application performance. Nuance Recognizer uses C locale standards for file processing regardless of the machine's current locale setting. For example, this applies to configuration files, diagnostic logs, and call logs.

## Licensing requirements

Speech Server does not require a license, but it relies on licenses assigned to Nuance Recognizer and Nuance Vocalizer products.

When the Speech Server process starts, it requests a pool of licenses from the License Manager. The Recognizer and Vocalizer configurations determine the number of licenses in the pool. When the runtime system accepts calls, the system begins counting the licenses being used.

**Note:** The Vocalizer products, Nuance Vocalizer for Network and Nuance Vocalizer for Enterprise are licensed separately.

## Hardware requirements

The processor requirements recommended for Speech Server hosts are:

- **Minimum:** Dual-Core Intel Xeon 2.0 GHz or Dual-Core AMD Opteron 2216 2.4 GHz
- **Recommended:** Dual Quad-Core Intel Xeon E5410 2.33 GHz

Nuance recommends a more powerful machine for large deployments with high port densities and heavy call volumes. The memory and storage requirements are:

- **Minimum**—At least 4 GB of memory (RAM) and 100 GB storage.
- **Recommended**—8 GB of memory and 250 GB recommended.

## Installing on Linux

You can install Nuance Speech Server and its sample client on the same machine or different machines. The instructions below assume separate client and server machines.

### Installation paths on Linux

During installation, the setup procedure installs the Nuance Speech Server software in */usr/local/Nuance/Speech\_Server/server* and the sample client software in */usr/local/Nuance/Speech\_Server/client* unless you specify a different location. The installation sets the environment variable `$NUANCE_DATA_DIR` to */var/local/Nuance*. This variable defines the location for log, cache, and utterance files.

**Note:** To start Speech Server as a daemon using the `service NSSservice start` command, you must define `$NUANCE_DATA_DIR` in the `$NSSVRDSK/SETUP-env.sh` file. For example:

```
export NUAGE_DATA_DIR=/var/local/Nuance
```

After installation, source `SETUP-env.sh` in */usr/local/Nuance/Speech\_Server/server/*. This updates `$PATH` and `$LD_LIBRARY_PATH` for Speech Server, Recognizer, and Vocalizer (if installed). It also sets Speech Server, Recognizer, and other Vocalizer (if installed) environment variables.

You could also run the start command (`./start`) in the same location to source environment variables and start Speech Server.

Environment variable settings are:

- `$LD_LIBRARY_PATH=`  
`/usr/local/Nuance/Speech_Server/server/lib:/usr/local/Nuance/Vocalizer_for_product/common/speech/components:/usr/local/Nuance/Recognizer...`

Where `Vocalizer_for_product` is either `Network` or `Enterprise`.

- `$NSSSVRSdk=/usr/local/Nuance/Speech_Server/server` (default location for Speech Server)
- `$PATH =`  
`/usr/local/Nuance/Speech_Server/server/bin:/usr/local/Nuance/Vocalizer_for_product/common/speech/components:/usr/local/Nuance/Recognizer...`
- `$SWISRSdk=/usr/local/Nuance/Recognizer` (default location for Recognizer)
- `$VNETWORKV5_VOICE_PATH=/usr/local/Nuance/Vocalizer_for_Network` (default location for Nuance Vocalizer for Network voices)
- `$VOCALIZER_VOICE_PATH=/usr/local/Nuance/Vocalizer_for_Enterprise` (default location for Nuance Vocalizer for Enterprise voices)

**Note:** `$VOCALIZER_VOICE_PATH` returns a value if the voice is installed in a non-default location. The path isn't shown for a voice installed in the default location.

Redefining  
`$NUANCE_DATA_DIR`

If you want to use another location for the current session to store log files and recordings, you can redefine `$NUANCE_DATA_DIR` as follows:

- 1 After you have installed Speech Server, copy the entire directory structure generated under `$NUANCE_DATA_DIR` to the new desired location (including any contained files).
- 2 Change the value of `$NUANCE_DATA_DIR` to the new location.

Changing `$NUANCE_DATA_DIR` only changes the installation path for the current session. The file `/etc/profile.d/100-SETUP-nuance-common-permanent.sh` defines the variable system-wide. Once you update this file, close all shell sessions (xterm, ssh, the console, etc.) and restart all relevant Nuance Speech Server services for the change to take effect.

## Disabling the firewall

Before installing or upgrading, disable the firewall.

- 1 Make sure the DNS and hostname are returned correctly with these commands:

```
- #hostname (returns the hostname)
- #hostname -f (returns the fully qualified hostname)
- #hostname -i (returns the IP address)
```

- 2 Disable the firewall capabilities with this command:

```
> service iptables stop
```

If using IPv6 firewall, also enter this command:

```
> service ip6tables stop
```

- 3 To prevent the firewall from starting whenever you restart the machine, enter:

```
> chkconfig --level 2345 iptables off
```

If using IPv6 firewall, also enter this command:

```
> chkconfig --level 2345 ip6tables off (
```

- 4 Edit the file `/etc/selinux/config` and set SELINUX to disabled.



## Upgrading Nuance Speech Server

Service packs are cumulative. You can install any service pack over the GA version or an earlier service pack, including 5.1.8. Note that the upgrade overwrites configuration settings in *NSSserver.cfg*. To keep changes in this file, copy it under a different name before performing the upgrade, for example, *NSSserver\_save.cfg*. Reapply your changes after the upgrade.

## Uninstalling previous releases of Nuance Core Services

Nuance Speech Server is not compatible on the same host with Nuance Core Services 4.0.

To remove Nuance Core Services 4.0.x:

```
> rpm -e NCoreServices-FTA-RES NCoreServices-WATCHER
```

## Installing the sample client on Linux (recommended)

The Speech Server distribution includes an installer for a sample client application. You should install and run the sample application to confirm that the Speech Server software is functioning correctly. See [Testing installations with the sample application](#).

To install the sample software on your client machine:

- 1 Confirm that all prerequisite software is installed. See [Software requirements](#).
- 2 Extract the downloaded client software:

```
> tar -zxvf NSS-Client-version_number-i686-linux.tar.gz
```

- 3 Change directory:

```
> cd Nuance_Speech_Server_Client
```

- 4 Start the installation script:

```
> ./install.sh
```

The installer prompts you to accept the default installation directory (*/usr/local*) or to specify an alternate absolute path.

- 5 After installation finishes, see [Configuring the system](#)

## Using MRCP waveform logging on Linux

To use MRCP waveform logging, you must have a web server on the same machine as Nuance Speech Server.

If httpd (Apache) is already installed when you install Speech Server, Speech Server automatically runs an RPM trigger script to add a virtual host configuration to the installed httpd. The virtual host configuration uses port 90 and has a document root of *\$NUANCE\_DATA\_DIR*. Additionally, the script configures the virtual host with a predefined set of MIME-type-to-file-extension mappings, as well as document expiration settings to allow documents to be cached by Nuance products so that the documents are not unnecessarily and continually fetched during production. For an example of a web server configuration, see *Installing Nuance Speech Server*. When autoconfiguration takes place, Speech Server writes the virtual host configuration to */etc/httpd/conf.d/zNSS.conf*.

**Note:** The Speech Server installer does not include httpd (Apache), because all supported Linux distributions already include httpd (Apache) on the operating system installation media. If you need to install httpd after the initial installation, insert the installation

media, mount it, change to the RedHat/ or CentOS/ directory and use "rpm -Uvh " to install the httpd packages. If there are missing dependencies, you may need to add the filenames of the additional .rpm packages that are required to fulfill the dependencies.

If you wish to use a different web server, you must configure it according to the directions in *Configuring Nuance Speech Server*, *Configuring Speech Server*, "Saving audio files", which also contains general information on waveform logging and web servers.

## Installing the server software on Linux (required)

To install the server software on the server machine:

- 1 Confirm that all prerequisite software is installed. See [Software requirements](#).
- 2 Download the Nuance Speech Server product from Nuance Network at [network.nuance.com](http://network.nuance.com).

- 3 Extract the downloaded software:

```
> tar -zxvf NSS-version_number-i686-linux.tar.gz
```

- 4 Change directory:

```
> cd Nuance_Speech_Server
```

- 5 Run the installation script:

```
> ./install.sh
```

The installer prompts you to accept the default installation directory (*/usr/local*) or to specify an alternate absolute path.

- 6 Start Speech Server as described in [Starting and testing Speech Server](#).
- 7 After installation finishes, perform basic configuration described in [Configuring the system](#).

## Uninstalling the Linux software

To remove Speech Server:

```
> rpm -ve NSS
```

Add these commands to remove all Nuance speech products.

```
> rpm -ve Nuance-OAM  
> rpm -ve Nuance-Doc  
> rpm -ve Nuance-Common
```

## Installing on Windows

You can install the sample client and Nuance Speech Server software on the same machine or on different machines. The instructions below assume separate client and server machines.

**Note:** You must have administrator privileges for the domain where the server is located.

### Installation paths on Windows

During installation, the setup procedure installs the Nuance Speech Server software in *C:\Program Files (x86)\Nuance\Speech\_Server\server* unless you specify a different

location. After installation, the `%NSSVRSDK%` environment variable points to the installation location.

The installation process also sets the environment variable `%NUANCE_DATA_DIR%` to `C:\ProgramData\Nuance\Enterprise`. (Note that *ProgramData* is a hidden folder.) If you wish to use another location for storing log files and recordings, you can redefine `%NUANCE_DATA_DIR%` as follows:

- 1 After you have installed Speech Server, copy the entire directory structure generated under `%NUANCE_DATA_DIR%` to the new desired location (including any contained files).
- 2 Change the value of `%NUANCE_DATA_DIR%` to the new location.

## Disabling the firewall

Before installing or upgrading, disable the firewall. From the Control Panel, select Windows Firewall and check Off.

## Upgrading Nuance Speech Server

You can upgrade this release of Nuance Speech Server directly over 6.2.x, 6.2, or 5.1.8. This version of Nuance Recognizer overwrites configuration settings in `NSSserver.cfg`. If you wish to keep changes you have made in this file, you should make a copy before performing the upgrade, and give the copy a different name (for example, `NSSserver_save.cfg`). You can then reapply your changes after the upgrade.

## Uninstalling previous releases of Nuance Core Services on Windows

Nuance Speech Server is not compatible on the same host with installations of Nuance Core Services 4.0. To ensure Nuance Core Services is not installed:

- 1 Log into a Windows account with Administrator privileges.
- 2 Select Add/Remove Programs from the Control Panel.
- 3 Click on the Nuance Core Services program, and click Remove.

## Installing the sample client on Windows (recommended)

The Speech Server distribution includes an installer for a sample client application. You should install and run the sample application to confirm that the Speech Server software is functioning correctly. See [Testing installations with the sample application](#).

To install the sample software on your client machine:

- 1 Extract the downloaded .zip file to a folder of your choice. Open that folder and double-click `Nuance_Speech_Server_Client_6.2.exe`. By default, the setup procedure installs to `C:\Program Files (x86)\Nuance\Speech Server\client`.
- 2 Follow the on-screen instructions for installing the client on your machine.

## Using MRCP waveform logging on Windows

To use MRCP waveform logging, you must have a web server on the same machine as Nuance Speech Server.

If Apache 2.2 is already installed when you install Speech Server, Speech Server automatically backs up the existing `httpd.conf` file in the Apache 2.2 *config* directory to

*httpd.conf.bak* and replaces it with an *httpd.conf* file that supports integration with Speech Server 6.2. If you wish to retain changes you made earlier to *httpd.conf*, you must copy them manually from *httpd.conf.bak* to the new *httpd.conf*.

**Note:** The Speech Server installer does not install Apache 2.2. If you want to use Apache 2.2 for MRCP waveform logging, you must install it before you install Speech Server. You can obtain an Apache 2.2 release from the Apache HTTP Server Project web site (<http://httpd.apache.org>).

If you wish to use a different web server, you must configure it according to the directions in *Configuring Nuance Speech Server*, *Configuring Speech Server*, “Saving audio files”, which also contains general information on waveform logging and web servers.

## Installing the server software on Windows (required)

To install the server software on the server machine:

- 1 Confirm that all prerequisite software is installed. See [Software requirements](#).
- 2 Log into your server as the administrator. Speech Server software runs as a Windows service. You must have administrator privileges on your server to install and configure the Speech Server service.
- 3 Download the Nuance Speech Server product from Nuance Network at [network.nuance.com](http://network.nuance.com).
- 4 Extract the .zip file and run *Nuance\_Speech\_Server\_version.exe*. Follow the online instructions.
- 5 Start Speech Server as described in [Starting and testing Speech Server](#).
- 6 After the installation finishes, perform basic configuration described in [Configuring the system](#).
- 7 Restart the system and test the installation. See [Testing installations with the sample application](#). If you install additional products in the future (see [Installation order for Nuance speech products](#)) test again.

## Running a silent installation on Windows (optional)

Optionally, you can use the command line to perform a “silent” installation. When you do this, the procedure does not display questions or ask for confirmation, and only the default components are installed.

- 1 Change to the directory to the downloaded installation files, and start the installation:  

```
> start /wait Nuance_Speech_Server_6.2.exe /s /v/qn
```
- 2 Restart the system. This happens automatically after a silent installation. To prevent the automatic reboot, add *REBOOT=Suppress* to the installation command.

## Uninstalling the Windows software

Uninstall Nuance Speech Server and Client (if installed) with the Windows control panel.

# Configuring the system

Most configuration parameters have default values that allow a system to run immediately after installation. You will be able to adjust those values later to better match the conditions of your deployment or improve performance.

Some initial configuration is best performed as part of the installation process.

You must set some parameters to enable communication between Nuance speech products.

- **(Required)** If you installed and intend to run the Nuance recognition server on a separate machine, you must configure the location. By default, Speech Server looks for the Nuance recognition server on the same host. For more information, see [Installing Recognizer or Vocalizer after Speech Server](#)

<i>NSSserver.cfg</i> parameter	Description
server.nrs.serverAddress	<p>A recognition server address in the format <i>host:port</i>.</p> <p>This parameter connects Speech Server directly to the recognition server without using a Nuance resource manager. This parameter overrides <a href="#">rm.Addresses</a>. In order to use resource manager to access multiple recognition server instances, you must not set this parameter. The default is localhost:8200.</p> <p>Set in <i>NSSserver.cfg</i>.</p>

- **(Required)** If you run more than one Nuance recognition server, you must run the Nuance resource manager. Configure the resource manager IP addresses and ports as follows:

<i>NSSserver.cfg</i> parameter	Description
rm.Addresses	<p>Locations of one or more resource managers. This parameter is overridden by <a href="#">server.nrs.serverAddress</a>. In order to use resource manager to access multiple recognition server instances, you must not set <a href="#">server.nrs.serverAddress</a>.</p> <p>Set the parameter with a comma-separated list of servers using the <i>host:port</i> format (the port is optional):</p> <p><i>host[:port][,host[:port]]*</i></p> <p>Examples: 10.3.12.123:7777,10.3.12.124:7777</p> <p><b>Note:</b> You must specify the identical value for <a href="#">rm.Addresses</a> when you run the Nuance recognition servers. See <i>Installing Nuance Recognizer</i>.</p>

- **(Required)** The system can a single write diagnostic log for the whole system (default) or can write per-company logs. For an overview, see *Logging with Nuance Speech Products*.

To write per-company diagnostic logs, set [server.log.diagLogPerCompany](#) to 1 in *NSSserver.cfg*, and set [nrs.DiagLogPerCompany](#) when starting recognition servers (see *Installing Nuance Recognizer*).

- **(Optional) Watcher**—Nuance Watcher is installed as part of the Speech Server installation, but by default it is not started and is not required. If you want to use the watcher to control Speech Server, you must start it.
  - On Windows, use Start→Settings→Control Panel→Administrative Tools→Services. You can either start the watcher service directly or change its startup type from Manual to Automatic.
  - On Linux, start the watcher from the command line, as described in *Monitoring Processes with Nuance Watcher*.
- **(Optional) Management Station**—If you want to control your system with Nuance Management Station, you must edit the file *mserver\_hosts.txt* to identify the host(s) running the Management Station. Here is the path:

Windows: *C:\Program Files\Common Files\Nuance\Common\data\oam\mserver\_hosts.txt*

Linux: */usr/local/Nuance/Common/data/oam/mserver\_hosts.txt*

By default, *mserver\_hosts.txt* contains the following line:

```
localhost:8080
```

Each entry in *mserver\_hosts.txt* consists of a hostname and port separated by a colon. Each such *hostname:port* entry must appear on a separate line. The hostname can be the machine name or IP address. The port number is always 8080. For example:

```
mtl-venus:8080
10.0.0.00:8080
```

If you identify two Management Stations, the first one is considered to be the primary and the second one is the standby. It's good practice to configure a primary and a standby Management Station, in case the primary machine goes down.

After you have edited *mserver\_hosts.txt*, you must restart the watcher.

You can also modify *mserver\_hosts.txt* after installation to change the Management Station address or configure additional standby Management Stations.

## Installing Recognizer or Vocalizer after Speech Server

If you install Recognizer or Vocalizer after installing Speech Server, you must configure them to communicate with each other. (Ignore this section if you install those products before Speech Server.)

- If you install Nuance Recognizer *on the same host* as Speech Server, ensure the following parameters are not commented in *NSSserver.cfg*:

```
server.mrcp2.resource.0.dll
server.mrcp2.resource.0.name
server.mrcp2.resource.0.type
server.mrcp2.resource.0.cfgprefix
server.mrcp2.osrspeechrecog.userconfigTemplate.path

server.mrcp1.resource.3.dll
server.mrcp1.resource.3.name
server.mrcp1.resource.3.url
```

```
server.mrcp1.resource.3.cfgprefix
server.mrcp1.osrspeechrecog.userconfig.path
```

```
server.mrcp2.resource.4.dll
server.mrcp2.resource.4.name
server.mrcp2.resource.4.type
server.mrcp2.resource.4.cfgprefix
```

These parameters will be commented out if, at installation time, Speech Server doesn't find that the Recognizer is installed.

- If you install Vocalizer, ensure the following plug-in parameters are available and not commented in *NSSserver.cfg*:

```
server.mrcp2.resource.1.dll
server.mrcp2.resource.1.name
server.mrcp2.resource.1.typev
server.mrcp2.resource.1.cfgprefix
server.mrcp1.resource.2.dll
server.mrcp1.resource.2.name
server.mrcp1.resource.2.url
server.mrcp1.resource.2.cfgprefix
```

These parameters will be commented out if, at installation time, Speech Server doesn't find that Vocalizer is installed. Set `server.mrcp2.resource.1.dll` to `nvsspeechsynth`, and set `server.mrcp1.resource.2.dll` to `mrcp1nvsspeechsynth`:

```
server.mrcp2.resource.1.dll = nvsspeechsynth
server.mrcp1.resource.2.dll = mrcp1nvsspeechsynth
```





# Starting and testing Speech Server

---

Speech Server is flexible about the ways it can be started. You can start and stop it as a commandline executable, as a service, a daemon, or under the control of an administrative console such as Nuance Management Station.

Speech Server runs on Windows and Linux. The main executable is *NSSserver.exe* for Windows or *NSSserver* for Linux. The server requires configuration to determine its execution parameters (which port to run on, the maximum number of server connections, and so on).

## Linux starting and stopping

You can run Speech Server as a daemon, or from the command line, or through the Management Station.

During startup, the *SETUP-env.sh* script (found in the *server* directory) sets the runtime environment. To add environment variables or to execute tasks before starting Speech Server, you can append commands to this script.

**To run Speech Server as a daemon**, you must have root privileges. Enter:

```
> service NSSservice start
```

Speech Server runs as user “nuance” when started as a daemon.

**Note:** To start Speech Server as a daemon using the service command, you must define *\$NUANCE\_DATA\_DIR* in the *\$NSSVRDSK/SETUP-env.sh* file. For example:

```
export NUANCE_DATA_DIR=/var/local/Nuance
```

To set the daemon to auto start, for runlevels 3 and 5, execute the following command. Note that the command does not actually start Speech Server, it just changes the OS config to start NSSservice at startup time.

```
> chkconfig level 35 NSSservice on
```

To stop the Speech Server demon, enter:

```
> service NSSservice stop
```

**To run Speech Server from the command line**, you must be a user with full read, write, and execute rights, or a user in a group with those rights.

1 Change directory:

```
> cd root/usr/local/Nuance/Speech_Server/server
```

2 Execute the *start* shell script:

```
> sh ./start
```

Speech Server then runs as user “nuance.”

Optionally, it is possible to edit the *start* shell script and run NSSserver directly. Use -config to specify a different configuration file. You must supply a fully-qualified pathname for the configuration file. For more information about the NSSserver command, see [Starting Speech Server from the command line](#).

To stop Speech Server from the command line, execute the *stop* shell script (found in the *server* directory). For example:

```
> sh ./stop
```

You can also stop the server using Ctrl-C. This stops the server immediately and disconnects all in-progress sessions.

To run Speech Server through the Management Station:

- 1 Configure Management Station address by editing the file *mserver\_hosts.txt* (see [Configuring the system](#)).
- 2 Assign a role that includes Speech Server. For more information on creating and using roles, see *Administering the Nuance Management Station*.
- 3 Start Speech Server from the Management Station. Later, you can stop Speech Server from the Management Station.

## Runlevel

If the Graphical User Interface for the Linux operating system is not needed, Nuance recommends changing the operating system runlevel to runlevel 3 to conserve system memory. A reboot is required to change the runlevel. The default runlevel is stored in file */etc/inittab*, for example:

```
# Default runlevel. The runlevels used by RHS are:
# 0 - halt (Do NOT set initdefault to this)
# 1 - Single user mode
# 2 - Multiuser, without NFS
# 3 - Full multiuser mode
# 4 - unused
# 5 - X11
# 6 - reboot (Do NOT set initdefault to this)
#
id:3:initdefault:
```

## Windows starting and stopping

You can run Speech Server through the Management Station, as a Windows service, or from the command line.

**To run Speech Server through the Management Station**, see *Administering the Nuance Management Station* for details.

**To run Speech Server as a Windows service**, do this:

- 1 Click Start→Settings→Control Panel→Administrative Tools→Services.
- 2 Right-click the Nuance Speech Server service and select Start, Restart, or Stop as needed.

The Speech Server installer defines *NSSserver.exe* as a Windows service with a manual Startup Type. To start automatically whenever the system is rebooted, change the Startup Type to Automatic.

To run Speech Server from the command line, you can be Administrator or a user in the Administrator security group. Also, a standard (non-administrative) user can run Speech Server from the command line if these rights are set for C:\ProgramData\Nuance:

- Modify
- Read and execute
- List folder contents
- Write

Run *startserver.bat* from the installation directory.

Optionally, it is possible to edit *startserver.bat*. Use *-config* to specify a different configuration file. You must supply a fully-qualified pathname for the configuration file. The command format is:

```
> NSSserver.exe -config configuration_file
```

For more information about the NSSserver command, see [Starting Speech Server from the command line](#). To stop Speech Server from the command line, use Ctrl-c. This stops the server immediately and disconnects all in-progress sessions.

## Starting Speech Server from the command line

To run Speech Server on Windows or Linux directly from the command line, use the NSSserver command:

```
> NSSserver [option] [parameter1=value] [parameter2=value]...
```

You can set any Speech Server parameter in the command line. There are two optional options:

Option	Description
-s [install remove start]	Install, remove or start the Windows service
-d	Run as a daemon in Linux

### Example:

```
NSSserver rm.Addresses=mtl-nvp16.nuance.com
server.callLog.tcp.port=10101
server.callLog.tls.port=10102
server.log.filename=$(NUANCE_DATA_DIR)/system/diagnosticLogs/nss1.log
DiagFileName=$NUANCE_DATA_DIR/system/diagnosticLogs/nep1.log
server.rtp.port=7900 server.mrcp2.transport.tcp.port=6075
server.mrcp2.sip.maxCountOfSession=192
server.mrcp2.sip.transport.udp.port=5066
server.mrcp2.sip.transport.tcp.port=5066
server.mrcp2.transport.tls.port=6076
server.mrcp2.sip.transport.tls.port=5067
server.inet.useInetFromOSR=0
server.mrcp2.rsspeechsynth.userconfig.path=$(VNETWORKV5_SDK)/config/
    user-NSS01.xml
server.mrcp2.osrspeechrecog.userconfig.path=$(SWISRS SDK)/config/
    User-NSS01.xml
config.ManagementStationHost=localhost:8080
```

This command defines basic system conditions, including:

- Resource manager
  - Call log ports
  - Log file locations
- For information on how to set different log files, see *Logging with Nuance Speech Products*.
- Communication ports
  - Configuration file locations (Vocalizer and Recognizer)
  - Management station location

You can also start Speech Server using built in scripts. For more information, see [Linux starting and stopping](#) or [Windows starting and stopping](#).

## Testing installations with the sample application

You can use the sample application to test the Speech Server software. To do this, you must install the sample client application. For Windows, see [Installing the sample client on Windows \(recommended\)](#). For Linux, see [Installing the sample client on Linux \(recommended\)](#).

The sample is a command-line program that reads and executes one or more script files. These scripts exercise the system by sending MRCPv2 messages and audio data. You can start the scripts by executing the command *client.exe* on Windows or running the script *client.sh* on Linux.

As installed, the sample requires that you have also installed the en-US recognition language and/or voice on the Speech Server and/or Nuance recognition server. To run the sample using a different language, modify the language declaration in the digits grammar, which is found in *demo.mrcp*. For example, the declaration for Canadian French would be:

```
builtin:grammar/digits?language=fr-CA
```

**Note:** The sample client supports only raw (headerless) audio files.

### Testing essential connectivity and recognition

After starting the Nuance recognition server and Speech Server, run the sample client with the *demo.mrcp* script. The script executes a basic recognition sequence using the built-in grammars on the server. To run the sample:

- 1 On the client machine, open a command prompt window.
- 2 Change to the scripts subdirectory of the MRCP test client application. By default the directory is:  

```
$(NSSSVRSDK)\client\scripts
```
- 3 Enter:  

```
..\bin\client.exe -s localhost -p 5060 demo.mrcp
```
- 4 Compare your results to the output described in the section on call log examples in *Logging with Nuance Speech Products*

**Note:** The sample application bundled with Speech Server supports various transport protocols for carrying SIP and MRCP messages. There are several variations of the *demo.mrcp* script included in the `scripts/` folder. Each script variation has a batch file you can run to demonstrate the script and the associated command line arguments. The transport protocols and the batch files that demonstrate them are:

- SIP/UDP with MRCP over TCP. Demonstrated by *sip-udp.bat*.
- SIP/UDP with MRCP over TLS. Demonstrated by *sipudp\_mrcptls.bat*.
- SIP/TCP with MRCP over TLS. Demonstrated by *mrcp-tls.bat*.
- SIP/TLS with MRCP over TCP. Demonstrated by *sip-tls.bat*.
- SIP/TLS with MRCP over TLS. Demonstrated by *sip-mrcp-tls.bat*.

## Testing text-to-speech

You can test the TTS installation by running the sample client with the *demoprompt.mrcp* script. To run the sample:

- 1 Install Vocalizer voices. The *demoprompt.mrcp* script uses en-US by default.  
**Note:** If en-US is not installed on Vocalizer, the synthesis will still work, but the resulting synthesized speech may be of poor quality.
- 2 On the client machine, open a command prompt window.
- 3 Change to the scripts subdirectory of the MRCP test client application. Enter:  

```
> ..\bin\client.exe -s localhost -p 5060 demoprompt.mrcp
```
- 4 When the script completes execution, check the contents of the *demoprompt.ulaw* file (created by the script), which contains the speech generated by the test.
- 5 Compare your results to the Vocalizer output in the section on call log examples in *Logging with Nuance Speech Products*.

## Running the sample client application

In addition to testing installations with the *demo.mrcp* script provided by Nuance, application developers can write their own scripts to exercise the Speech Server software. This section describes options for running the sample client.

### Windows

Here is a typical command to run the program:

```
> client.exe -k num_runs -s server -p port script
```

For more information on available options, run *client.exe* with the option *-h*.

### Linux

When you run Speech Server on Linux, you do not run the client executable directly. When you install the NSS client for Linux, the script *client.sh* is installed in the client home folder. The script automatically sets the proper environment variables and then runs the executable *./bin/client*. Using the script is similar to using the Windows version, *client.exe*; you can run *./client.sh -h* to display its arguments.

This chapter details solutions for some common problems you may encounter using Nuance Speech Server, and describes the information you need should you have to contact technical support.

# Troubleshooting tips

This section contains some tips for troubleshooting problems with either the server or the client. Additional tips are also available directly from technical support.

## Using Wireshark to analyze messages

If you need a detailed analysis of system messages to localize a problem, the Wireshark tool may be helpful. Wireshark is a network protocol analyzer used to troubleshoot and analyze RTSP and RTP messages. You can use Wireshark to trace Media Resource Control Protocol (MRCP) messages via RTSP messages and to make statistical evaluations of RTP-packages that carry audio data.

Versions of the Wireshark software run on both Windows and Linux platforms. You can download from the <http://www.wireshark.org> site.

## Problems running the installer

If you encounter problems installing the software:

- 1 Confirm that your hardware satisfies the minimum system requirements for the operating system, the version of Nuance Recognizer, and the version of Vocalizer that you are attempting to install.
- 2 Confirm that you have administration or root privileges.
- 3 For Windows operating systems, try setting the language of the operating system to English. The installer checks for the “Users” group, and might not find this name for non-English languages. For example, a French language operating system might name the a group “Utilisateurs.” You can use any operating system language providing there is a group named “Users” that owns the Administrator account.

## Windows service fails to start

If Speech Server fails to start as a Windows service, the cause might be an error in the *NSSserver.cfg* configuration.

Try running from the command line so you can see any output errors:

```
> NSSserver
```

Also check the file *log.txt* for any errors.

## Speech Server fails to start because of missing ordinal

During Speech Server installation or when attempting to start the server, this error can occur:

The ordinal <nnnn> could not be located in the dynamic link library <file>.dll.

This rare error is likely caused by having more than one file of the same name (the <file>.dll in the error message) on your system. Your computer is finding the wrong file before finding the correct one. Check your file system and set your Path variable as appropriate.

## Client cannot start a session

If the client application gets no response to its INVITE message, confirm that the SIP ports match: check the value of the SIP configuration in *NSSserver.cfg*, and verify that the client is using the same port.

## Bad configuration

If there are errors in configuration in *NSSserver.cfg*, Speech Server probably won't start. Check the log.txt for errors and/or the console (stdout/stderr).

If *rm.Addresses* or *server.nrs.serverAddress* doesn't match, then Speech Server won't be able to allocate a recognizer instance from the resource manager, and the SIP INVITE will get a 503 error response.

## Recognizer or Vocalizer resources are unavailable

If the system responds that speech resources are not available:

- 1 Review the setup of your license manager.
- 2 Ensure you have a sufficient quantity of licenses, and the license files are available.
- 3 Check the requested number of licenses in the Recognizer or Vocalizer configuration.

## Text-to-speech requests fail

If requests for text-to-speech fail, Speech Server might not be able to find the Vocalizer libraries, or possibly *NSSserver.cfg* has bad values for Vocalizer resources. For instructions, see [Configuring the system](#).

Vocalizer 5.x and higher enforces strict SSML validation by default, so poorly structured SSML is no longer tolerated. For information on changing the SSML validation settings, if required, see *Configuring Nuance Vocalizer*.

## Server appears to ignore a message sent using client

The most common problem with using the sample client is that the content length specified in the message does not match the content length actually sent by the client, because of extra newline control characters.

To avoid this, the sample client can automatically calculate the length of the body of the MRCP message; simply use the header:

```
Content-Length: $msg.contentLength()
```

## Loopback address returned at session start

On the Linux operating system, due to the default search order for hostname resolution, in addition to the default contents of the file */etc/hosts*, you may notice that Speech Server returns the loopback address at the start of each session. (The INVITE response includes the line *c=IN IP4 127.0.0.1*.) However, if the client is on a separate machine, then 127.0.0.1

will not work. The IP address lookup for the NSS server's name needs to return the external IP address, not the loopback address. Should this problem occur:

1 Open the file */etc/hosts*.

2 Change this line:

```
127.0.0.1 hostname localhost.localdomain
```

to:

```
127.0.0.1    localhost    localhost.localdomain
ipAddress hostname
```

Where:

- *ipAddress* is the IP address of the Speech Server host
- *hostname* is the name of the Speech Server host

For example:

```
127.0.0.1    localhost    localhost.localdomain
11.2.3.4 myhost
```

3 Restart Speech Server.

## Troubleshooting with Nuance technical support

When reporting an incident to Nuance technical support, provide the following to speed their response:

- The configuration file being used to control the server.
- The MRCP messages being sent. If possible, replicate the error with client using a test script and send the test script.
- A diagnostic log that contains the error with any relevant diagnostics (as directed by technical support) enabled.
- Information on the release numbers and updates of all software on the system including the operating system version and any service packs.
- The size of the machine being used including number of CPUs, speed, and memory.
- The type and description of the problem.

Generally the most useful diagnostic tag for doing first level diagnoses of a problem is:

- `server.log.diagTag.2001`

Enable this tag to show all MRCP (TCP) transactions with the server. These transactions allow technical support to determine the type of message traffic being received at the time of the incident and the actions that were attempted based on the messages.