Installing Emacspeak HOWTO

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Revision History

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Previously, this document was known as the Emacspeak HOWTO, and was written and maintained by Mr. James Van Zandt.		

This document contains the installation instructions for the Emacspeak audio desktop application for Linux.

Please send any comments, or contributions via e−mail to Sharon Snider. This document will be updated regularly with new contributions and suggestions.

Table of Contents

1. Legal Notice

2. Introduction

Emacspeak is a Linux application that allows users to get synthesized speech output inside the Emacs desktop environment. Because Emacspeak is actually integrated into the Emacs environment (instead of just running "on top" of an environment like most screen readers), Emacspeak provides much more context−specific information than its commercial screen reader counterparts. In this sense, Emacspeak is not a "screen reader," but rather a subsystem of Emacs that produces speech output.

Although Emacspeak only works inside Emacs, there are a large number of both built−in and add−on applications for Emacs that do everything from keeping track of your appointments to playing CDs to coding HTML. In addition, Emacs has a special command shell mode that can be used to run any command−line application.

This HOWTO focuses on installing Emacspeak on your Linux system. It does not discuss how to actually use Emacs or Emacspeak − for information on usage, refer to the Emacspeak User's Guide, available at http://www.tldp.org/guides.html#espk.

3. Documentation Conventions

As per the LDP Author Guide, this HOWTO uses the following documentation conventions:

File Names:	`file.extension`
Commands to be typed:	**command**
Command prompt:	> (unless otherwise specified)

4. Requirements

There are a number of things you must have before you install Emacspeak, including Linux, a Linux−compatible sound card, Emacs, and a hardware or software speech synthesizer. You should read this section carefully before installing Emacspeak, because Emacspeak will not function correctly if any of the requirements are missing.

4.1. Linux Distributions

This HOWTO assumes that you have already installed Linux on your system. If not, you may wish to refer to the "Linux Information Sheet" by Michael K. Johnson a http://www.linuxdoc.org/HOWTO/INFO−SHEET.html. It provides an introduction to Linux, discusses some hardware requirements, and also has a section on how to obtain Linux.

There are a number of different Linux distributions (distros) that you can choose from. All of the distros are based upon the same basic Linux code, or kernel, but each distro has a different installation process, features, and support options. Martin Wheeler's "Distributions HOWTO," at http://www.linuxdoc.org/HOWTO/Distributions−HOWTO/index.html, discusses the pros and cons of a number of Linux distros. You can also find information about each distribution on their respective web sites. Those distros known to support Emacspeak are listed below with their URLs:

- Debian Linux − http://www.debian.org
- Mandrake Linux − http://www.mandrakelinux.com/en/
- Red Hat Linux − http://www.redhat.com
- Slackware Linux − http://www.slackware.com
- SuSE Linux − http://www.suse.com
- TurboLinux − http://www.turbolinux.com

All of the distributions listed above can be downloaded free of charge from their respective web sites. However, the downloads are quite large, so you'll need a fast Internet connection. You will also need access to a CD burner, to burn your own CDs from the images you download. Depending on the distribution, you may also have to download and make a boot floppy. Once you have burned the CDs and created the boot floppy, you can install Linux. Alternatively, you can purchase the disks at your local computer store for between $30 and $80 US. Both of these options are discussed at length in the Linux Installation HOWTO at http://www.linuxdoc.org/HOWTO/Installation−HOWTO/overview.html, so you may want to refer there before making a decision as to which route to take.

Most methods of installation require sighted assistance. However, if you prefer to install Linux yourself, there are two options. The first is to install Linux from a DOS machine running JAWS. This option requires two machines, a null modem cable, JAWS for DOS, and a hardware speech synthesizer. More information on this option can be found in, Appendix A. The second option is installing one of the distributions that includes a Speakup kernel patch. This option requires a Speakup−enabled distro and a hardware synthesizer. Speakup is a screen reader that is patched into the kernel, so it starts talking at boot and will speak during the entire installation. Currently, Speakup is supported on Debian, Red Hat 7.1, and Slackware. The Speakup option also requires you to download the CD images and make your own CDs. Refer to the Speakup home page at http://www.linux−speakup.org for instructions for this option.

For assistance with installing Linux, Eric Raymond's Linux Installation HOWTO, at http://www.linuxdoc.org/HOWTO/Installation−HOWTO, is highly recommended reading. In the HOWTO, Eric discusses hardware requirements, choosing a distro, and installing your distro of choice. If Eric's HOWTO does not provide enough installation−specific information, you can refer to the documentation specific to your distribution, available at the URLs given in the distro list.

4.2. Emacs

Because Emacspeak is an Emacs subsystem, you must have Emacs installed for Emacspeak to work. Most distributions include Emacs by default, so it should be installed on your system when you install Linux.

If you do not have Emacs on your system or you want to check on the latest version of Emacs, refer to the Emacs homepage at http://www.gnu.org/software/emacs/emacs.html. If you install Emacs on your own or choose to upgrade, be sure to install all of Emacs, including both the X and non−X versions (even if you do not plan to use X). Some Emacs applications depend on packages included in the X version, even if you use those applications in the non−X version of Emacs.

If you would like to learn more about Emacs and how to use it, an excellent place to start is the Emacs Beginner's HOWTO, by Jeremy D. Zawondy. It's available at http://www.linuxdoc.org/HOWTO/Emacs−Beginner−HOWTO.html. There is also an online manual available at http://www.gnu.org/manual/emacs/index.html. Alternatively, you can try the built−in Emacs tutorial. To start the tutorial, type **C−h t**.

4.3. Background applications

Emacspeak depends on a number of applications. Because each Linux distribution comes with different applications, you may find that your distro does not quite have everything that Emacspeak needs to run properly. Therefore, before you install anything else, it is important to make sure you have all the necessary applications, as listed below.

- **Tk, Tcl,** and **Tclx**: Check to make sure you have these applications. If not, download and install the following rpms from http://www.rpmfind.net: `tcl−8.3.2−7mdk`, `tk−8.3.2−7mdk`, and `tclx−8.3.2−7mdk`.
- **Lesstif**: If you want to run the Graphical User Interface (GUI) versions of the ViaVoice sample programs, you'll need these packages. For Emacspeak, the Lesstif packages are only useful if you're running Xwindows, or if you want to use the GUI tools.

  Lesstif can be downloaded from either the Lesstif home page http://www.lesstif.org or Sourceforge http://sourceforge.net/projects/lesstif. Currently, the latest release of Lesstif is version 0.93.14; however, Marty Moore recommends using the 0.92.32 version. You can either download the gzipped tarball that contains all the necessary files or download the three individual packages (`lesstif−mwm−0.92.32−1.i386.rpm`, `lesstif−clients−0.92.32−1.i386.rpm`, and `lesstif−devel−0.92.32−1.i386.rpm`). If you choose to use the three individual files, be sure to use the **−−nodeps** option when you unpack the RPMs to avoid dependancy errors.

- **sndconfig**: You will need to run this application from the command line to configure your sound card. At the command prompt, type **sndconfig** and follow the instructions.

If your sound card is not recognized by sndconfig, refer to, Troubleshooting, for more information.

- **stdiom**: This package is only necessary if you are using ViaVoice as your synthesizer, or if you want to use auditory icons, and your sound card is not a multi−channel card.

  For information on auditory icons, refer to the Emacspeak User's Guide.

4.4. Speech Synthesizers

To produce speech output, you need two things: something to parse the information on the screen (Emacspeak), and something to produce the sounds you hear as output (a speech synthesizer). Emacspeak can use either a hardware or software synthesizer to produce sound output. Software synthesizers have the benefit of being either free or very inexpensive. Hardware synthesizers can run from $150 to $1600 or more, but they are typically easier to install than software synthesizers.

4.4.1. Hardware synthesizers

Emacspeak supports the following hardware synthesizers:

- Accent
- Apollo
- Braille Lite
- Braille n' Speak
- DECtalk Express (the original Emacspeak synthesizer) or MultiVoice
- DoubleTalk PC and AT
- Internal DECtalk PC and DECtalk PC2
- LiteTalk
- Type n' Speak

Support for the DECtalk Express and MultiVoice synthesizers is built into Emacspeak. If you have a synthesizer other than a DECtalk Express, you may require additional drivers or "speech servers" to get Emacspeak to work with your synthesizer.

The Internal DECtalk PC and DECtalk PC2 require a kernel driver available from ftp://leb.net/pub/blinux/dectalk_pc−0.95.tgz. Installation instructions are at ftp://leb.net/pub/blinux/dectalk_pc−0.95.README.

The DoubleTalk PC and AT, Braille n' Speak, Type n' Speak, Braille Lite, Apollo, and Accent synthesizers all require an additional speech server that can be downloaded from http://leb.net/pub/blinux/emacspeak/blinux/emacspeak−ss−1.7−1.i386.rpm. A README file with installation instructions can be found at ftp://leb.net/pub/blinux/emacspeak/blinux/emacspeak−ss.README.

4.4.2. Software synthesizers

If you choose to use a software synthesizer, you must make sure your sound card is Linux compatible. In addition, if you want to perform any tasks that require a multi−channel sound card, such as playing auditory cues when you open or close an Emacs buffer, you must make sure that your sound card is multi−channel capable.

There is a complete list of Linux−compatible sound cards available at http://www.alsa−project.org. In addition, you can usually find information on your distribution's web site about which sound cards are supported with each distro.

Once you have ensured that your sound card is Linux compatible, you can install a software synthesizer. Currently the only one that works with Emacspeak is IBM's ViaVoice Text−to−Speech (TTS), formerly called ViaVoice Outloud. Many Emacspeak users use this software synthesizer, because it is free of charge. Instructions for installing ViaVoice can be found in, Appendix B.

5. Installing Emacspeak

Assuming that you have all the items listed in, Requirements, you are ready to install Emacspeak. The following steps provide the instructions to do so.

1. Go to the Emacspeak site at http://emacspeak.sourceforge.net and, from the Support and Documentation section, select an Emacspeak file to download. If you select the binary file, `emacspeak.tar.gz`, you will need to configure and make Emacspeak. If you have some experience with Linux, or if you're using a distribution that does not support RPMs, you should download this option. If your distro supports RPMs, you can download the ready−to−install version of Emacspeak (`emacspeak−14.0−1.noarch.rpm`).
2. Download the file and place it in your home directory.
3. Type **su root** and provide the root password if you are not already logged onto your machine as root. You'll need root permissions to install Emacspeak.
4. If you downloaded the rpm version of Emacspeak, unpack it using the command **rpm −i emacspeak−14.0−1.noarch.rpm**. If you downloaded the binary version, unzip and untar the file, then follow the installation directions in the README file in the resulting `emacspeak−14.0` directory.

   Once you have installed the rpm, you'll see a message saying that Emacspeak installed successfully, as well as some additional instructions.

5. If you are using Emacspeak v.14 or earlier and also using ViaVoice TTS as your synthesizer, change directories to the `/usr/share/emacs/site−lisp/emacspeak/servers/linux−outloud` directory and type the command **make**. This command compiles the ViaVoice TTS server. If you are not using ViaVoice, or if you have Emacspeak v.15 or later, you do not need to complete this step.
6. Using the **cd** command, change directories to the `/etc` directory and open your `profile` file with your favorite text editor (you must be root to edit the `profile`). Scroll to the bottom of the file, then add the following two lines:

   ```
   export DTK_PROGRAM DTK_PROGRAM=name of your speech server
   ```

   The value of DTK_PROGRAM must be the name of your speech server. A list of standard Emacspeak−supported speech synthesizers and the names of their respective speech servers is below.

ViaVoice TTS	Outloud
DecTalk Xpress	dtk−exp
DecTalk MultiVoice	dtk−mv

   Several additional synthesizers are supported, but they require add−on speech servers. Refer to the documentation for each specific speech server for more information.

7. Save your `profile` file and close it.

Now, you should have installed and configured everything required to run Emacspeak. To use Emacspeak, log on to your system as someone other than root (you should never run Emacspeak as root), and type **emacspeak** at the prompt. Emacspeak should start talking immediately.

6. Frequently Asked Questions (FAQs)

This sections covers some of the more common problems encountered when installing Emacspeak. If there is a topic that is not covered here, you should review the Emacspeak mailing list archives at http://www.cs.vassar.edu/~priestdo/emacspeak/. You can find the answers to many additional questions there.

The volume on my system is very low − how can I increase it?

The easiest way to turn up system volume is with a set of speakers. However, sometimes speakers aren't feasible (for example, with a laptop), or even with speakers, the volume is still not loud enough. In this case, you can use the application aumix to increase your system's volume.

Aumix comes with many distributions of Linux, but if your distro doesn't have aumix, you can download it from http://prdownloads.sourceforge.net/aumix/aumix−2.7.tar.gz. The latest version is 2.7.

To use aumix to increase your system's volume, type the command **aumix −v +100** or **aumix −w +100**. The numerical value is the percentage volume, so in this case 100 means 100%. You may want to try different settings to find the most comfortable one for you.

For more information on using aumix, type **aumix −h** at the command prompt.

sndconfig doesn't recognize my soundcard. What should I do?

If sndconfig doesn't recognize your soundcard, you should see if you can download a driver for your card. The Advanced Linux Sound Architecture (ALSA) Web site, located at http://www.alsa−project.org, lists many sound cards, along with their drivers (if available). Another alternative is the Open Sound System (OSS) for Linux. OSS is a commercial implementation of the Linux kernel drivers, and a list of supported cards can be found at http://www.4front−tech.com/osshw.html. There used to be a free version, but apparently it is no longer available (if anyone knows differently, please let me know).

Note

Some users have reported compatibility problems with ViaVoice and ALSA drivers. I have been unable to determine the exact problem or solution from various mailing archives, so if anyone can provide more information on this issue, please let me know.

When I try to install the ViaVoice RTK rpm file, I get the error "libXm.so.1 is missing." What's wrong?

The file `libXm.so.1` is part of the `lesstif` distribution, and it is also a shared library. This error message indicates that either `lesstif` is not installed, or that the system is unable to locate the file. Often shared libraries are referenced by a symbolic link to the real shared library file, which may be named something like `libXm.so.1.0.17`. When the name of the symbolic link to the shared library and the name of the real shared library file differ, the system may not be able to find the shared library, even if it exists. If another program depends on a shared library that cannot be found, an error message like the one above results. In the case of `libXm.so.1`, lesstif is only needed for graphical demonstration programs. Thus, if you do not plan to use the graphical mode, it is safe to install the ViaVoice RTK rpm using the option **−−nodeps**, which tells ViaVoice to ignore any missing dependencies.

Note

Note that this is only a workaround, not a "fix," and that it only works for ViaVoice Text−to−speech (TTS). This solution may not work if you use any of the ViaVoice voice recognition software.

When I compile the ViaVoice TTS server for Emacspeak, I get an error "tcleci.cpp:43:17: eci.h: No such file or directory." Where is `eci.h`?

This error message appears when you install the ViaVoice RTK and SDK in the wrong order, or if the SDK is not installed.

The file `eci.h` should be in the `/usr/include` directory. If it is not there, re−install ViaVoice TTS, RTK, then install ViaVoice TTS SDK. Check to make sure `eci.h` is in the `/usr/include` directory, then change directories to `/usr/share/emacs/site-lisp/emacspeak/servers/linux-outloud`, and type **make** at the command prompt. The ViaVoice TTS should now make successfully.

When I start Emacspeak, I keep getting the error "process speaker not running." What's wrong?

If you are getting this error message, there are several possible causes. This section steps though finding and correcting this problem.

The first step is to make sure that you have tcl correctly installed, as explained in the following instructions.

1. First, make sure you are in the `/usr/share/emacs/site-lisp/emacspeak/servers` directory.
2. At the command prompt, type **tcl *`name of speech server`***. The most common speech servers are **dtk−exp** and **outloud**.

If you get an error such as **bash: tcl:: command not found**, it means that tcl/tclx is not correctly installed on your system. You must get the latest version of either tcl or tclx and install it before Emacspeak will work.

If everything is installed correctly, you should hear a voice saying "IBM ViaVoice. This is Emacspeak" or something similar. A **%** command prompt should also appear. At the prompt, type **q "this is a test."** Then press **Return** and type **d**. This command runs the speech, so you should hear "this is a test" spoken. If you hear this, the server script is running properly. You can type **exit** to quit tcl.

You may also get an error like **stdiosynth executable not found** when you type **tcl*`name of speech server`***, and then get a command prompt. Testing has shown that this error can appear even when stdiosynth is correctly installed and Emacspeak is working. Even if you get this error message, you should still get the **%** command prompt, so you should be able to test the script.

If the script test was unsuccessful, (if tcl was found and you got a `%` prompt but you did not hear any speech), the next step is to make sure that you have the correct lines in your `profile` file to let Emacspeak know where to find the speech server. To check this, follow these steps:

1. Go to your `/etc` directory, then use you favorite text editor to open the file named`profile`.
2. Make sure the following lines are in the file:
   ```
   export DTK_PROGRAM DTK_PROGRAM=name of speech server
   ```

   The most common speech servers, are **outloud** and **dtk−exp**.

If these lines are not in your `profile` file, add them and then re−test tcl. If you are using ViaVoice TTS as your synthesizer, Emacspeak should work correctly at this point. If you are using a hardware synthesizer and you still do not get any sound, check to make sure that the environment variable `DTK_PORT` is set correctly in your `/etc/profile` file.

The variable `DTK_PORT` specifies which port your hardware synthesizer is plugged into on your computer. Under Linux, if your synthesizer is plugged into com1, you must set `DTK_PORT` to`/dev/ttyS0`, and if it is in com2, then `DTK_PORT` should be set to `/dev/ttyS1`. To set this variable, follow these steps:

1. Open your `profile` file located in the `/etc` directory.
2. Look for the variable `DTK_PORT`. If this variable does not exist, scroll to the bottom of the `profile` and add the following line:
   ```
   export DTK_PORT=/dev/ttySX
   ```

   In this line, the "X" should be replaced by the correct port number, as described above.

3. When you are finished, save and close the `profile` file.

Finally, retest tcl, and if it works, restart Emacspeak. Emacspeak should work correctly.

If you have a hardware synthesizer and are still not getting any speech, you probably do not have the necessary permissions to use the serial port for your synthesizer. There are a number of solutions to this problem, and the best solution depends on your operating environment. For example, if you are in a multi−user environment, controlling the access permissions to the serial device may be a concern. The options are as follows:

- Change the ownership of the serail device to the user running Emacspeak. To do this, type **chown *`username`* /dev/ttyS0** at the command prompt then type **chmode u+rw dev/ttyS0**.
- Add the user to the group associated with the serial device. On Red Hat systems this is usually the group**tty**. To do this edit the `/etc/group` file and find the line starting with **tty:**. At the end of that line, add ",*`username`*" where username is your username.
- Give read/write access to the serial device for all users. This is the least secure solution, but if you are the only user on the system, it will not matter. To give read/write access, make sure you are the root user and at the command prompt type **chmod o+rw /dev/ttyS0**.

7. Additional resources

Once Emacspeak has been successfully installed, you should become familiar with the Emacspeak commands and the many applications you can run with Emacs. Although this HOWTO does not cover this information, there are a number of excellent tutorials that are available for new users of both Emacs and Emacspeak. The following list provides a starting point:

- "A gentle introduction to Emacspeak," by Gary Lawrence Murphy, http://emacspeak−guide.sourceforge.net/tutorial.html/. Gary provides a lighthearted but thorough introduction to Emacs and Emacspeak, focusing on users who are not familiar with either application. This introduction is recommend as a starting point, even before you do the Emacs tutorial (see next item).
- "The (Official) Emacs Tutorial," by the Free Software Foundation. I call this the "official" tutorial because it is included with Emacs. To access this tutorial, start Emacspeak, then type **C−h t**. This tutorial discusses the basic Emacs commands, including navigation using Emacs as a text editor, and a bit about how Emacs works "under the hood." For new users this tutorial is strongly recommended, and even those users who are familiar with Emacs might find something new.
- "Emacspeak Tutorial," by Nita Van Zandt, available at http://www.mv.com/ipusers/vanzandt/emacspeak−tutorial−1.0.tar.gz. This tutorial helps new Emacspeak users get up and running and includes plenty of examples and step−by−step instructions. Once you have a grasp of Emacs, this tutorial is a must.
- "The Emacs Beginner's HOWTO," by Jeremy D. Zawodny. It is available at http://www.linuxdoc.org/HOWTO/Emacs−Beginner−HOWTO.html and discusses many of the topics discussed in the Emacs tutorial. However, it also includes overviews of some of the more popular Emacs packages, including VM, Gnus, BBDB, and AucTeX.
- "Using Emacspeak HOWTO," by Jennifer Jobst, available at http://emacspeak.sourceforge.net. This HOWTO is a task−based guide on getting the most out of Emacs and Emacspeak. From browsing the Internet to coding to playing games, this HOWTO tells you where to get the best Emacs applications for each task and how to use them.

8. Appendix A: Installing Linux from a DOS machine

In the original Emacspeak HOWTO, James Van Zandt provided instructions on how to install Linux from a DOS machine using a null−modem cable. As with the other instructions in this HOWTO, I tried, unfortunately without success, to duplicate this procedure. However, I have provided the information gathered during testing in the following section. If you successfully install Linux from a Windows" or DOS" machine over a null−modem cable, please let me know the procedure you followed and I'll include it here.

Please note that the original instructions for installing Linux over a null modem cable were written for a DOS machine. I first attempted to reproduce these instructions with my Windows 2000 machine (from the DOS prompt) and Red Hat 7.1. Although I successfully downloaded and installed JAWS for DOS (available from Freedom Scientific at http://www.freedomscientific.com/fs_downloads/morejaws.asp), I was unable to get a DOS VT100 terminal emulator installed. I tried using TELIX, which was popular several years ago, but when I tried to install TELIX version 3.51, I got a runtime error. Since I was unable to find any other DOS terminal emulators, I decided to try using a Windows screenreader and terminal emulator instead. This section documents the procedure I tried with the Windows machine.

8.1. Requirments

For this process, you will need a machine with a working speech synthesizer and a terminal emulator program. For my test, I used a Windows 2000 machine and tried both Narrarator (which comes with Windows 2000) and JAWS for Windows v.3.5. For the terminal emulator, I used tried both Hyperterminal (which comes with Windows) and CRT (which can be downloaded from http://www.vandyke.com/products/crt). You will also need a second machine (on which to install Linux), a null modem cable, and a copy of your preferred Linux distribution on either floppy disk or CD−ROM.

8.2. Connecting the computers

To connect the two computers, you need a "null modem" cable. A "null modem" cable is a serial cable that connects ground to ground and transmits on each end to receive on the other. The cable that comes with the DOS applicationLapLink will work fine. The LapLink cable is particularly handy because it has both a 9 pin and a 25 pin connector on each end. Alternatively, you may be able to find a null modem cable at your local computer store, or you can have one made. If you choose to have one made, here are the required connections:

- For two 9 pin connectors, connect pin 2 (receive data) to pin 3, pin 3 (transmit data) to pin 2, and pin 5 (signal ground) to pin 5.
- For two 25 pin connectors, connect pin 2 (receive data) to pin 3, pin 3 (transmit data) to pin 2, and pin 7 (signal ground) to pin 7.
- For a 9 pin connector (first) to a 25 pin connector (second), connect pin 2 (receive data) to pin 2 (transmit data), pin 3 (transmit data) to pin 3 (receive data), and pin 5 (signal ground) to pin 7 (signal ground).

Once you have your null modem cable, you'll need to connect the two machines while both of them are off. It's easiest to use COM1 on both machines. Once you've got them connected, you're ready to start them up, as discussed in the next section

8.3. Installation

Once your machines are connected via the null modem cable, boot the DOS/Windows machine, then start the terminal emulation program. For my test, I tried both Hyperterminal (which comes with Windows 2000) and CRT (which can be downloaded from http://www.vandyke.com/products/crt. For some reason, the arrow keys did not work in HyperTerminal, making navigation within the HyperTerminal window impossible. However, the arrow keys (as well as Tab and Return) do work in CRT, so I recommend using CRT as your terminal emulator.

Set the terminal emulator for 9600 baud, no parity, eight data bits, 1 stop bit. If "Flow control" is an option, select Hardware. Also be sure to set your terminal emulation mode to VT100. Start the terminal emulator connection (you won't get any data at this point, as your Linux machine should still be off).

Once you've set up the terminal emulator on your DOS/Windows machine, insert the "boot" floppy or CD into your Linux machine and boot the machine. With Red Hat, at the `boot:` prompt, I typed in the command **linux text console=ttyS0**. Note that the "s" in "ttyS0" is capitalized, and that's a "zero" at the end of the string, not a capital letter "o." Other distributions may require other strings, so if you know the syntax required for distros other than Red Hat, please let me know and I will include that information here.

Once you've typed in this string at the `boot:` prompt and hit **Return**, you should get output in your terminal emulator program on your DOS/Windows machine. Unfortunately, at this point I discovered that neither JAWS for Windows nor Narrarator produces speech output in either the HyperTerminal or CRT terminal windows. This ultimately stymied my attempts to install Linux over a null modem cable.

9. Appendix B: Installing ViaVoice TTS

This section steps through the installation of ViaVoice TTS, which can be used as a software synthesizer with Emacspeak.

9.1. Downloading ViaVoice

First, you must download the ViaVoice Software Development Kit (SDK) and the Run Time Kit (RTK), as described in the following steps.

1. Go to IBM's ViaVoice TTS website a http://www−4.ibm.com/software/speech/dev/ttssdk_linux.html.
2. Scroll down to the Downloads section, and click on the Downloads link. You will be asked to provide a username and password before you download anything.
3. Download the following files:

    - ViaVoice TTS SDK for Linux V5.1. The filename is `viavoice_tts_sdk_5.tar`.
    - ViaVoice TTS Run Time Kit for Linux V5.1. The filename is `viavoice_tts_rtk_5.tar`.

9.2. Installing ViaVoice RTK

Now that you have downloaded the ViaVoice files, you can install them. You must install the RTK first, as it contains libraries required by the SDK.

1. Type the **su root** command and provide the root password to log on to your system as root.
2. Type the **cd** command to change to the directory that contains the files you just downloaded.
3. Untar the RTK using the command **tar −xvf viavoice_tts_rtk_5.tar**. You should now have two files in your directory, `ttsrt_readme.txt` and `ViaVoice_TTS_rtk_5.1−1.2.i386.rpm`.
4. Unpack the rpm using the command **rpm −i ViaVoice_TTS_rtk_5.1−1.2.i386.rpm**. You will be given a license agreement to read. You can press the spacebar to scroll through the document. When you've read the document, you'll be returned to the command prompt.
5. Type the command **source /etc/profile** to finish installing the RTK.

9.3. Installing ViaVoice SDK

Now that you have installed the RTK, you can install the SDK as well using the following steps:

1. Change directories to the directory that contains the SDK file you downloaded.
2. Untar the SDK file using the command **tar −xvf viavoice_tts_sdk_5.tar**. You should now have two files in your directory, `ttssd.readme.txt` and `ViaVoice_TTS_sdk−5.1−1.2.i386.rpm`.
3. Unpack the rpm using the command **rpm−i −−nodeps ViaVoice_TTS_sdk−5.1−1.2.i386.rpm**. You will be given a license agreement to read. You can press the spacebar to scroll through the agreement. When you've read the document, you'll be returned to the command prompt.

9.4. Testing the installation

Now that you have installed both the ViaVoice RTK and SDK, you must test to make sure that they are working correctly. You can perform two tests using the following steps:

1. Type the **cd** command to change to the `/usr/lib/ViaVoiceTTS/samples/cmdlinespeak/` directory.
2. Type the command **./runcmdlinespeak** at the prompt. You should hear your computer say "Hello, welcome to ViaVoice Outloud for Linux." Normal system volume is often very low, so you may not be able to hear it very well. Refer to, Troubleshooting, for information on how to increase your system volume.

If for some reason your test was not successful, refer to the installation notes provided with both the RTK (ttsrt.readme.txt) and the SDK (ttssd.readme.txt) for debugging information.

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Throughout this document, I have tried to give credit to other authors when referring to their work. If I missed a citation, please let me know and I will be sure to correct it. If you did the work, you certainly deserve the credit!