



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

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# **A Sample Configuration for IBM WebSphere Voice Server Automatic Speech Recognition and Text-to-Speech Using Avaya Interactive Response - Issue 1.0**

### **Abstract**

These Application Notes discuss a sample setup for installing an IBM WebSphere Voice Server (WVS) Automatic Speech Recognition (ASR) and Text-to-Speech (TTS) engines using an Avaya Interactive Response system. Although there are many documents that have information on some areas of installation and configuration, the purpose of this document is to provide users with one complete self-contained resource. The packages installed on the Avaya Interactive Response and the setup for testing the interaction between Avaya Interactive Response system and IBM WVS ASR and TTS engines are discussed.

# 1. Introduction and Scope

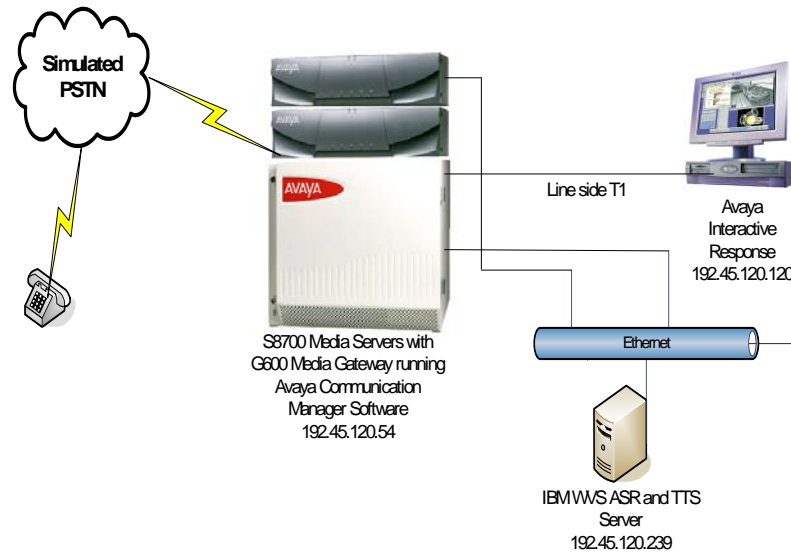
The installation, configuration, start-up and connectivity between an IBM WebSphere Voice Server (WVS) Automatic Speech Recognition (ASR), Text-to-Speech (TTS) server and the Avaya Interactive Response system are discussed in a step-by-step fashion in this document.

An example setup for this configuration is displayed in **Figure 1** below. The IBM WVS uses an ASR engine to recognize the caller's speech input and a TTS engine for generating synthesized speech output from text. An application<sup>1</sup> installed on the Avaya Interactive Response system interacts with the caller and provides input to the WVS. Packages installed on the Avaya Interactive Response are configured to interface with IBM WVS Automatic Speech Recognition (ASR) and Text-to-Speech (TTS) using Media Resource Control Protocol (MRCP). MRCP is an emerging, open standard for speech interfaces that supports the interoperability of vendor systems. When installed on the Avaya Interactive Response system, MRCP feature enables integration with ASR and TTS engines running on an IBM WVS [1]. The *vxmlFeatureTest.vxml* application installed on the Avaya Interactive Response system is used to verify the ASR and TTS functionality provided by the IBM WVS.

An incoming call over a PSTN network is delivered to the Avaya Interactive Response system over an available Line side T1. The call to the Avaya Interactive Response system is answered by *vxmlFeatureTest.vxml* application. The connection between the Avaya Interactive Response and the ASR and TTS resources on the IBM WVS is verified using the 'sproxyadm' command.

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<sup>1</sup> The application can be designed using Voice XML (VXML) or Transaction Assembly Script (TAS) scripting language.



**Figure 1: A Sample Configuration of Avaya Interactive Response with IBM WVS ASR and TTS.**

## 2. Equipment and Software Validated

**Table 1** shows the equipment and software version information.

Equipment	Software
Sun Blade Server	Avaya Interactive Response V1.3.104
Avaya S8700 Media Server Avaya G600 Media Gateway	Avaya Communication Manager 3.0.1 Load 346
Dell Blade Server	<ul style="list-style-type: none"><li>• Windows 2003 Server – Enterprise edition</li><li>• IBM WebSphere Administration Server (WAS) 5.1</li><li>• IBM WebSphere Fix Pack for WAS 5.1</li><li>• IBM WebSphere Voice Server (WVS) 5.1.3</li><li>• IBM ASR (US - English)</li><li>• IBM TTS (US - English)</li></ul>

**Table 1: Equipment and Software Version Information**

## 3. Avaya Interactive Response Client Packages for Speech Recognition and Text-to-Speech

### 3.1. Installing Core Speech Recognition and Proxy Text-to-Speech Client Packages on the Avaya Interactive Response

The following core packages must be installed to enable Speech Recognition and Text-to-Speech functionality. These packages can be located by changing directories to **/export/optional\_features** on the Avaya Interactive Response system.

1. **AVsproxy** – Speech Proxy Base Software.
2. **AVsrproxy** – Speech Proxy SR – Speech Recognition.
3. **AVttsprxy** – Proxy Text-to-Speech Package.

### 3.1.1. Procedure for Installing Avaya Interactive Response Packages

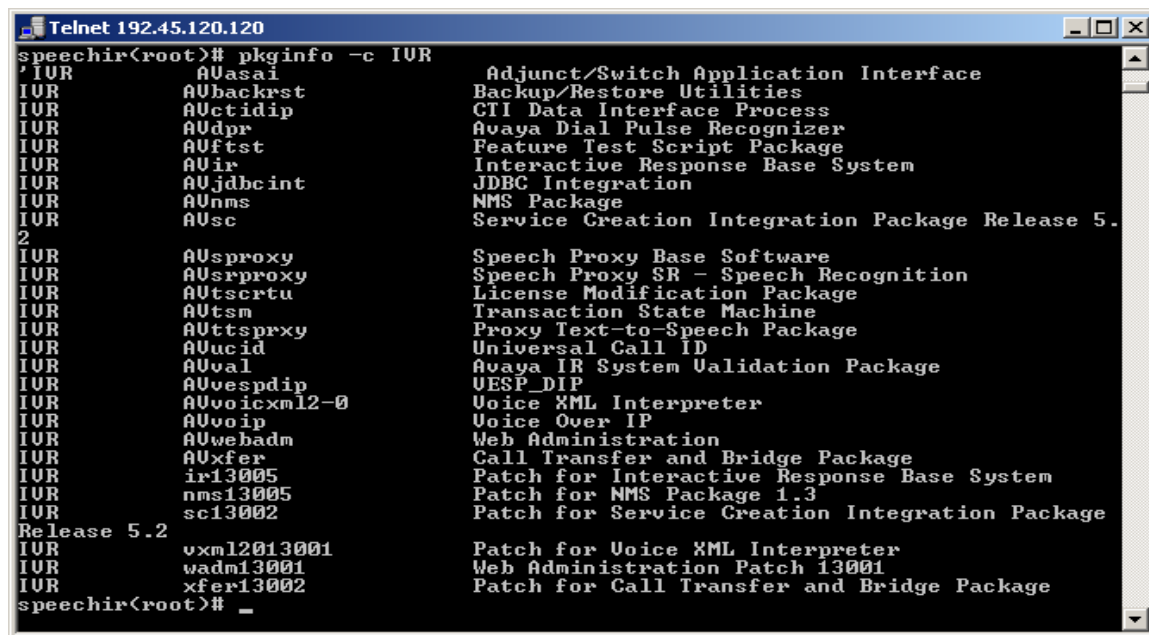
The instructions for installing additional patches for the packages can be located under the Interactive Response section in the <http://support.avaya.com> web site.

**Step 1.** Use the telnet program to access the Avaya Interactive Response system by typing in the command line 'telnet <IP address of the Avaya Interactive Response server>'. Type in the login and password.

**Step 2.** Once logged in, change to the following directory by typing 'cd /export/optional\_features'.

**Step 3.** Verify that the above packages are not already installed by typing 'pkginfo -c IVR'.

A sample output below displays the <AVpackagename> packages installed on the system. If the desired package cannot be viewed in this output, follow the steps below to install that package.



```
Telnet 192.45.120.120
speechir(root)# pkginfo -c IVR
IUR      AUasai      Adjunct/Switch Application Interface
IUR      AUbackrst    Backup/Restore Utilities
IUR      AUctidip     CTI Data Interface Process
IUR      AUdpr       Avaya Dial Pulse Recognizer
IUR      AUftst      Feature Test Script Package
IUR      AUir        Interactive Response Base System
IUR      AUjdbcint   JDBC Integration
IUR      AUjms       NMS Package
IUR      AUsc        Service Creation Integration Package Release 5.2
IUR      AUspoxy     Speech Proxy Base Software
IUR      AUsrproxy   Speech Proxy SR - Speech Recognition
IUR      AUtsrtu     License Modification Package
IUR      AUtsm       Transaction State Machine
IUR      AUtsprxy   Proxy Text-to-Speech Package
IUR      AUucid      Universal Call ID
IUR      AUval       Avaya IR System Validation Package
IUR      AUvespdip   UESP_DIP
IUR      AUvoicxml2-0 Voice XML Interpreter
IUR      AUvoip      Voice Over IP
IUR      AUwebadm    Web Administration
IUR      AUxfer      Call Transfer and Bridge Package
IUR      ir13005     Patch for Interactive Response Base System
IUR      nms13005    Patch for NMS Package 1.3
IUR      sci13002    Patch for Service Creation Integration Package
Release 5.2
IUR      vxm12013001 Patch for Voice XML Interpreter
IUR      wadm13001    Web Administration Patch 13001
IUR      xfer13002    Patch for Call Transfer and Bridge Package
speechir(root)# _
```

**Step 4.** Stop the voice system by typing 'stop\_vs'.

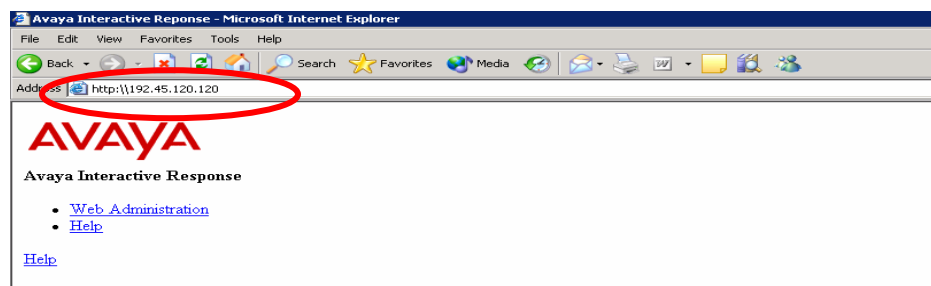
**Step 5.** Install each package by typing 'pkgadd -d .<packagename>'.

## 3.2. Stopping and Starting the Voice System

Use the method below to start and stop the voice system on the Avaya Interactive Response system [2]. This process is normally performed after installing a package or making a configuration change.

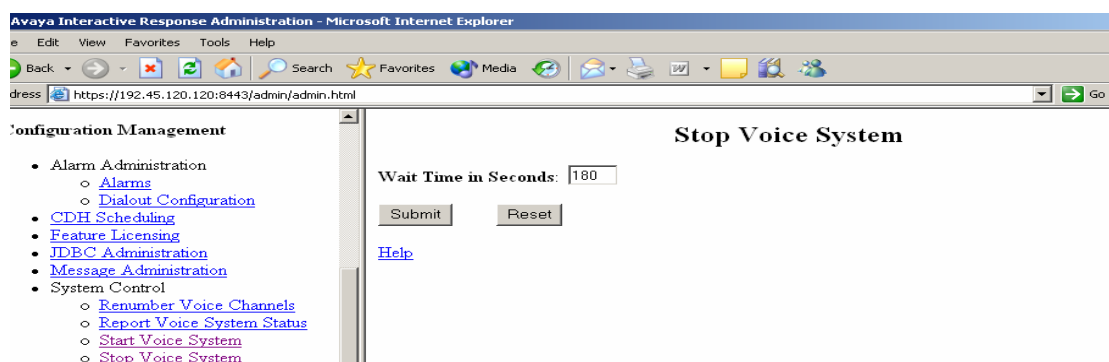
### 3.2.1. Using Web Administration

**Step 1.** Open any web browser and login to the web administration screen by typing '*http://<IP address of Avaya Interactive Response server>*' as shown below.

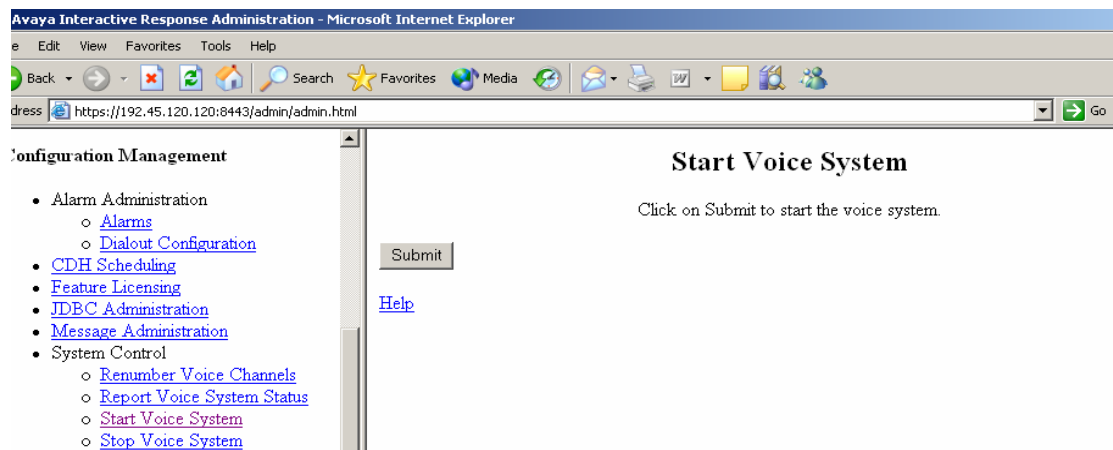


**Step 2.** Locate the links for *Start Voice System* and *Stop Voice System* under *System Control* as shown below. For stopping the voice system, enter an appropriate wait time and click the **Submit** button.

**Note:** Select a wait time depending on whether a call is in progress or if background tasks are running. Use the default value in case of uncertainty.



**Step 3.** Click on the *Start Voice System* link and the **Submit** button to start the voice system.



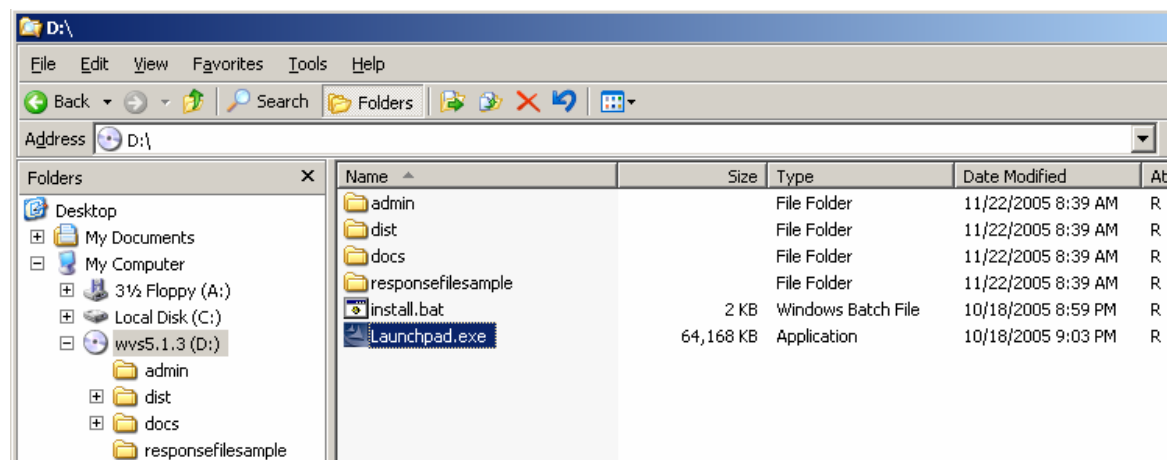
## 4. Installing IBM WebSphere Voice Server (WVS)

### 4.1. Installing IBM WVS 5.1.3

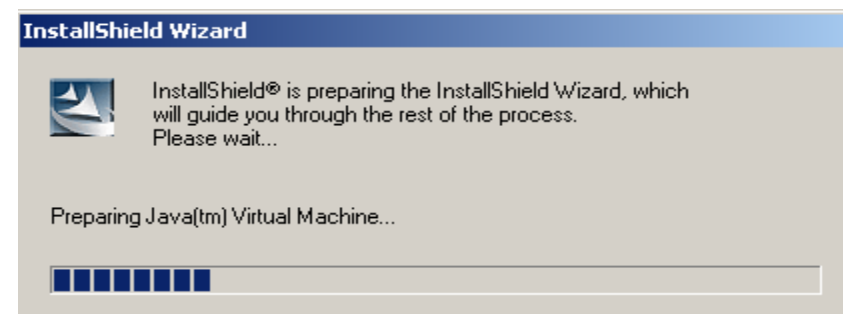
The installation process should be started with the IBM WVS 5.1.3 CD. The installation will prompt the user to insert the CDs below.

1. IBM WebSphere Application Server (WAS) 5.1.
2. IBM WAS 5.1 FixPack 1.
3. IBM ASR Engine.
4. IBM TTS Engine.

**Step 1.** Insert the IBM WVS 5.1.3 CD in the CD drive. Click on *Windows Explorer* and locate the root directory of the CD drive and open *Launchpad.exe* as shown below to start the installation.



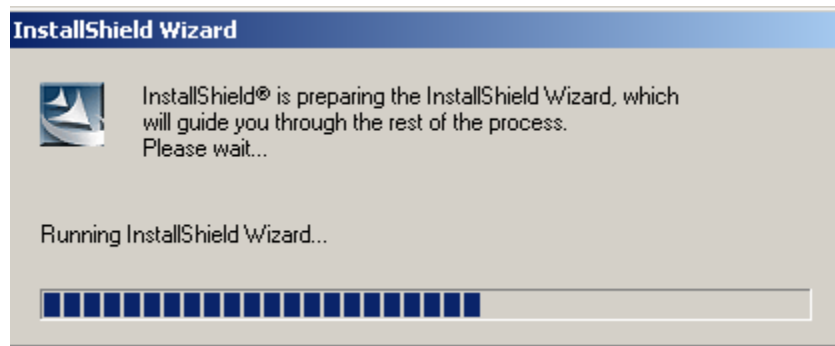
**Step 2.** The InstallShield Wizard displays the message box shown below.



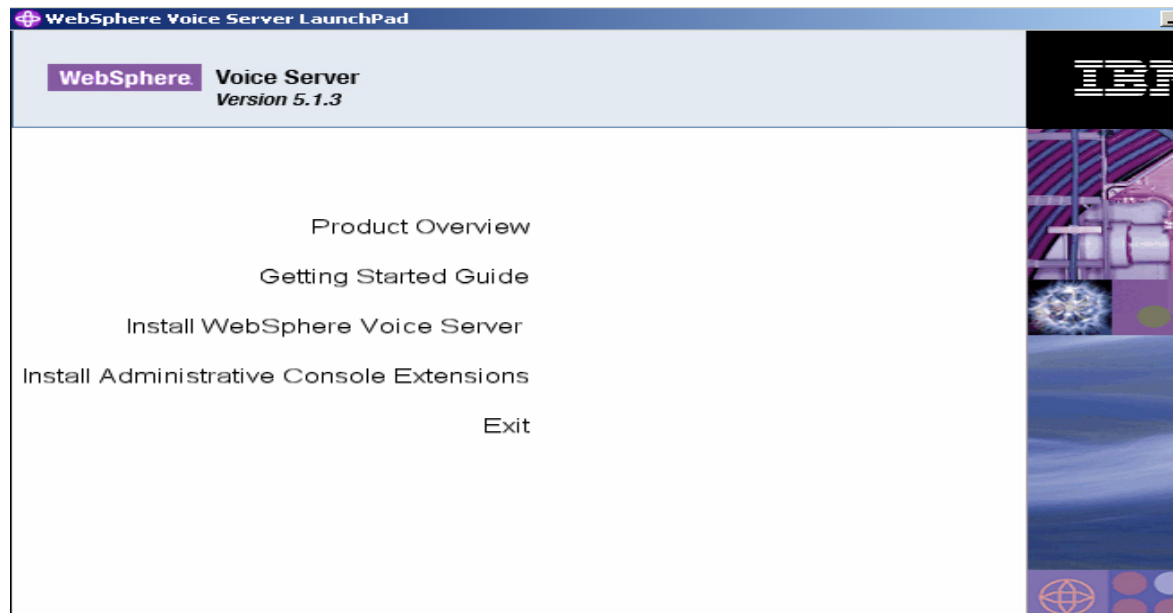


**Step 3.** The InstallShield Wizard screen with the status bar indicating progress will be displayed as shown below.

**Note:** After this screen, no status screen is displayed for 1-2 minutes.

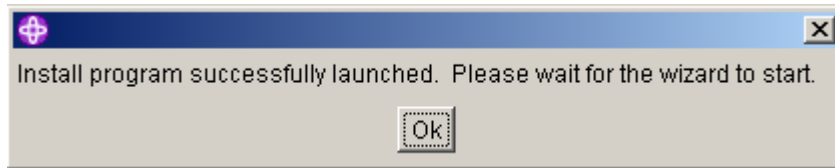


**Step 4.** The IBM WVS installation screen with the following options is displayed as shown below. Click on the ***Install WebSphere Voice Server*** link below.

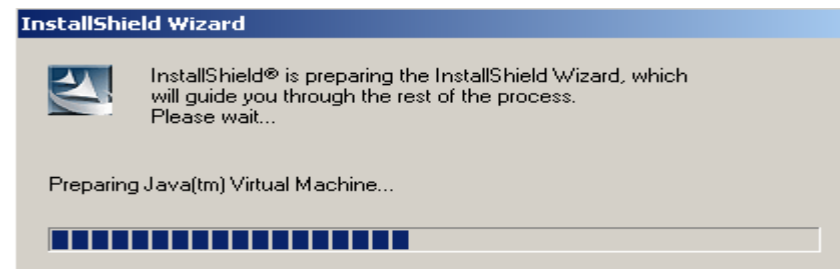


**Step 5.** A message box is displayed as shown below. Click **OK** to confirm and wait for the installation wizard to start.

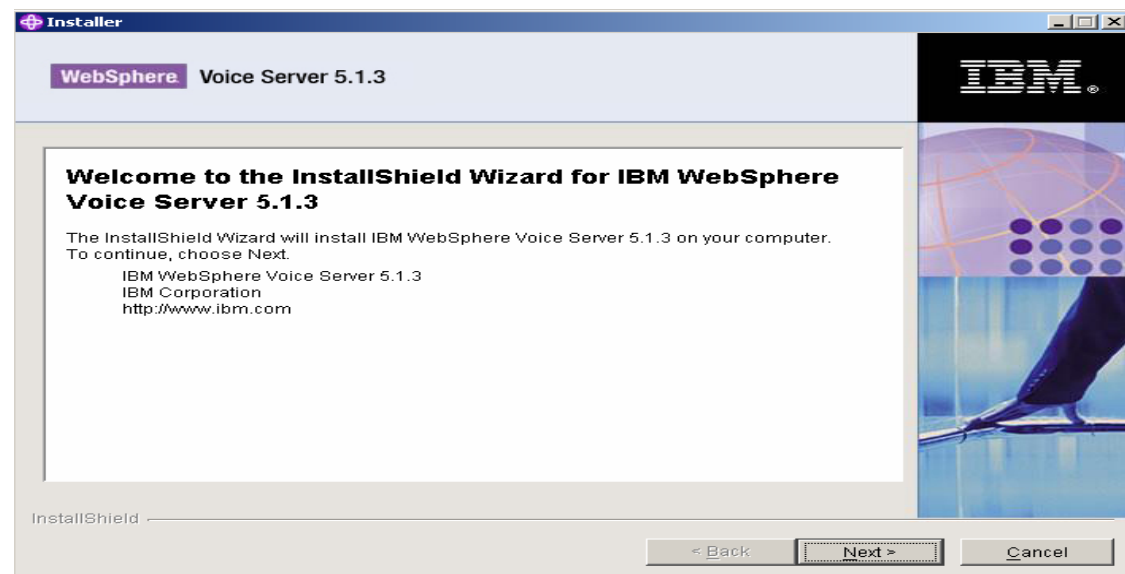
**Note:** There may be a period of inactivity for 1-2 minutes before the next screen is displayed.



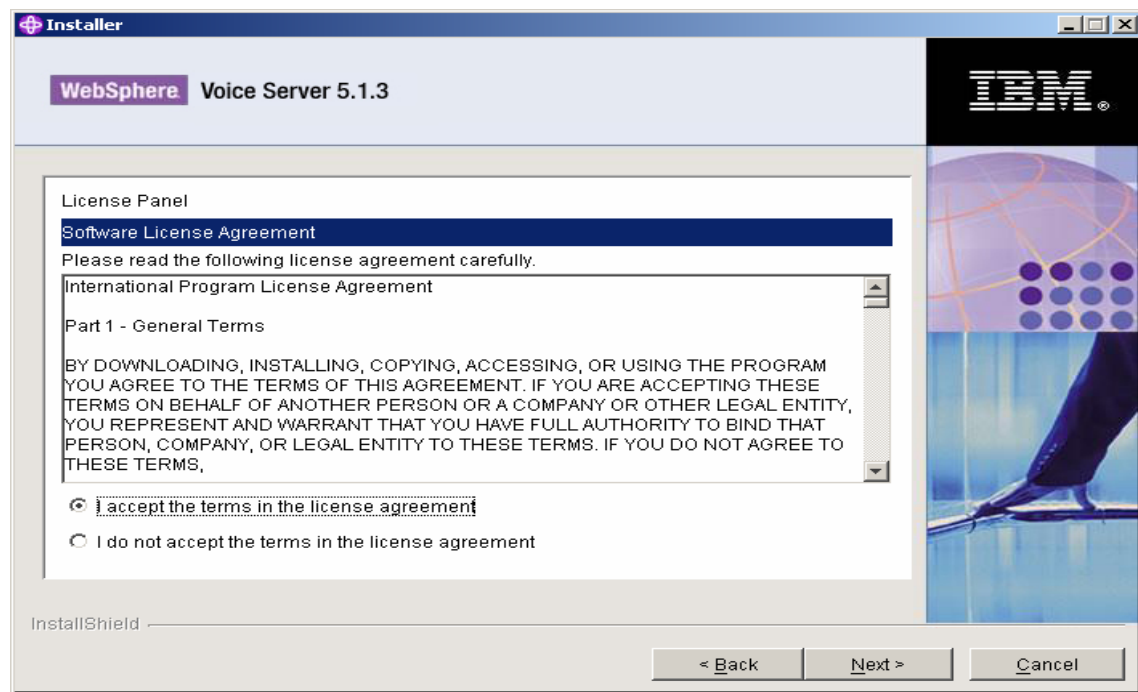
**Step 6.** The InstallShield Wizard screen displayed below will be seen next.



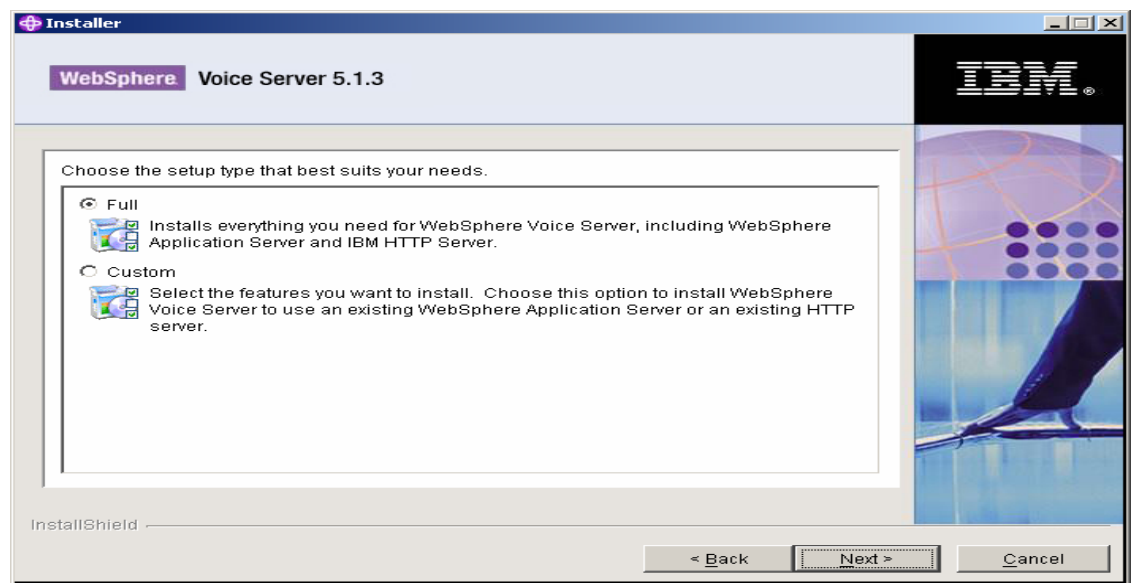
**Step 7.** The WebSphere Voice Server 5.1.3 screen as shown below is displayed. Click the **Next** button to proceed.



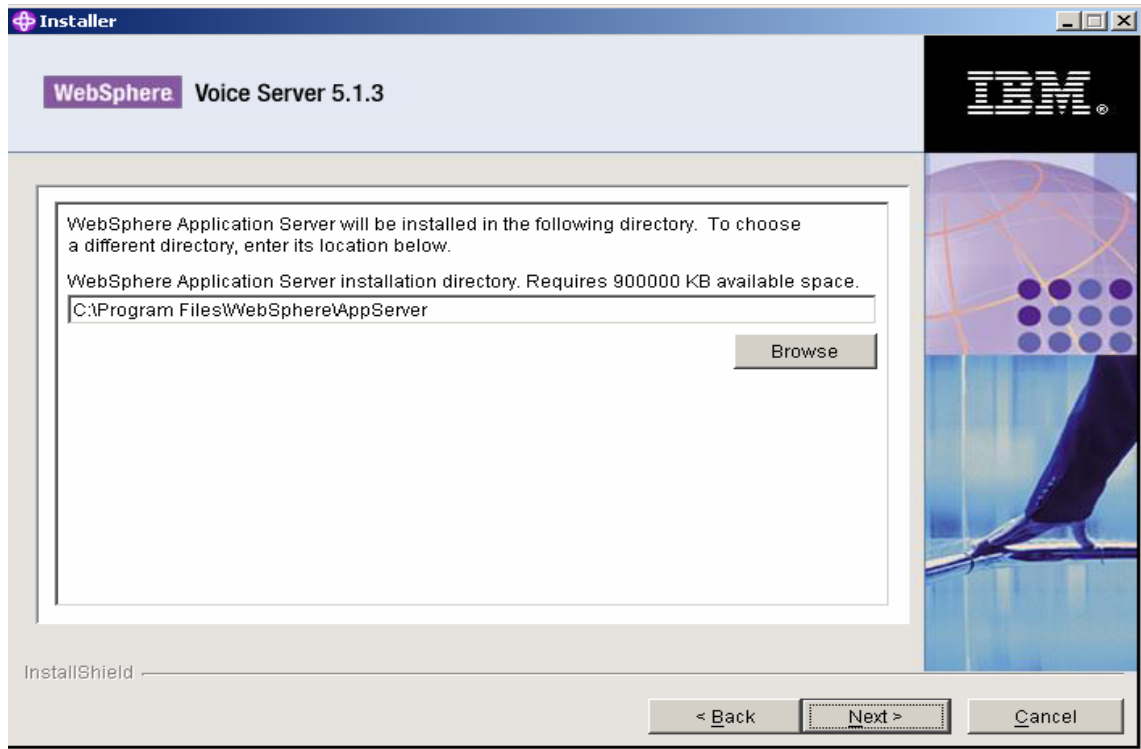
**Step 8.** Select the radio button as shown below, to accept the license. Click the **Next** button to proceed.



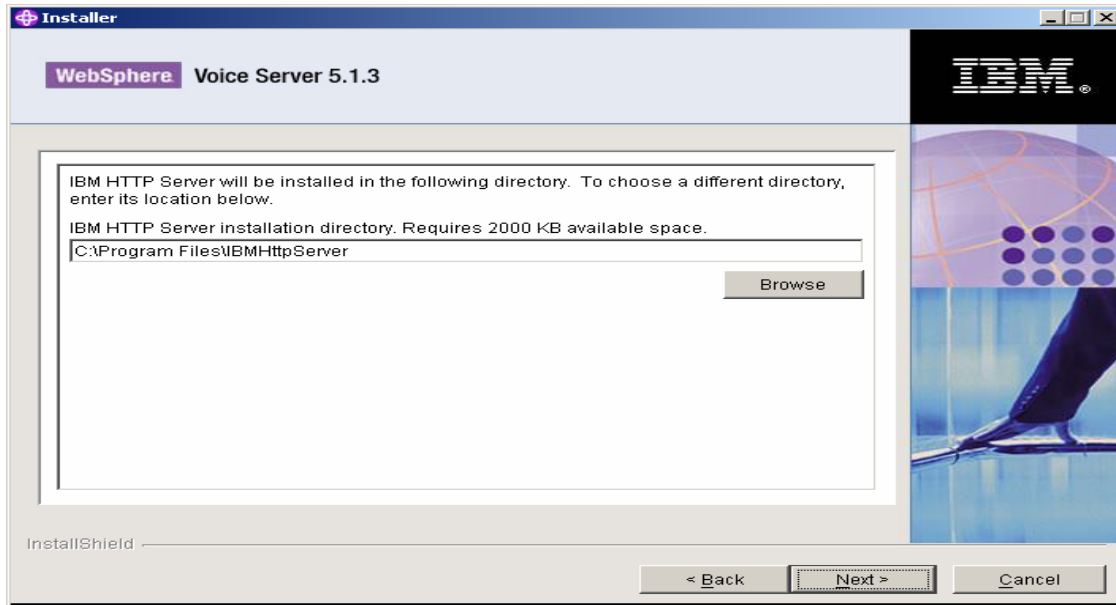
**Step 9.** Select the installation option as shown below and click the **Next** button to proceed.



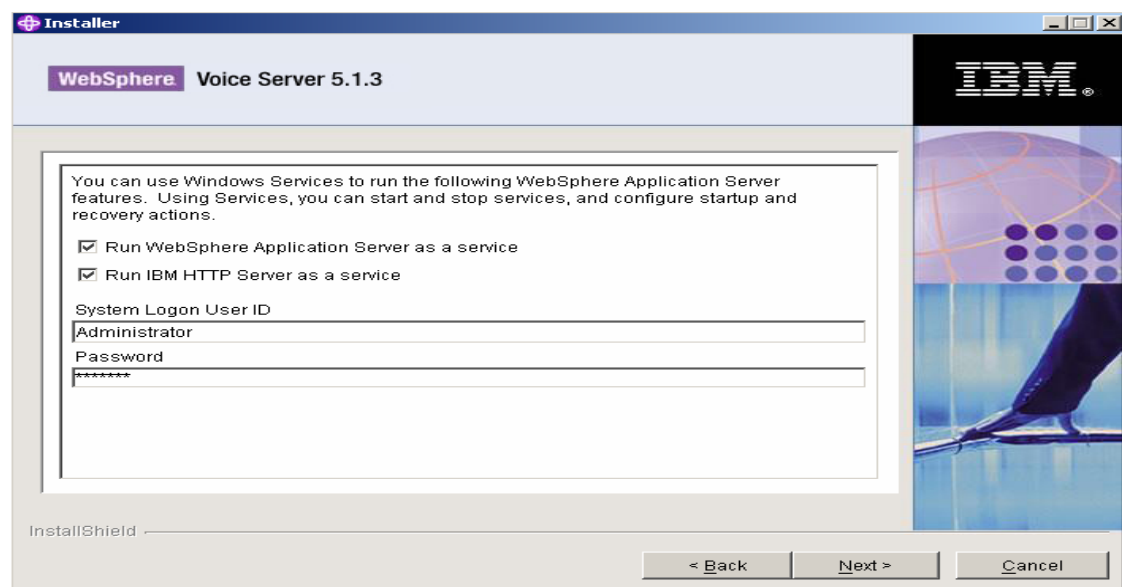
**Step 10.** Select an appropriate directory to install the IBM WebSphere Application Server (WAS). Click on the **Browse** button to select the desired installation directory. Click the **Next** button to proceed.



**Step 11.** Select an appropriate directory to install the IBM HTTP Server. Click on the **Browse** button to select the desired installation directory. Click the **Next** button to proceed.



**Step 12.** Check both boxes to run IBM WAS and IBM HTTP as services. Enter the appropriate windows user id and password for these services to run with administrative privileges. Click the **Next** button to proceed.



**Step 13.** Enter a unique node name and IBM WAS server hostname for this installation as shown below.

Enter a node name for this instance of WebSphere Application Server. The node name is used for administration and must be unique within its group of nodes (cell).

Node name  
wvs1

Enter the hostname for this installation of WebSphere Application Server. Use the fully-qualified DNS name, short DNS name, or the IP address for this computer.

WebSphere Application Server hostname  
wvs1

InstallShield

< Back Next > Cancel

**Step 14.** Select an appropriate directory to install the IBM WebSphere Voice Server (WVS). Click on the **Browse** button to select the desired installation directory. Click the **Next** button to proceed.

WebSphere Voice Server will be installed in the following directory. To choose a different directory, enter its location below.

WebSphere Voice Server installation directory. Requires 1550000 KB available space.

C:\Program Files\WebSphere\VoiceServer

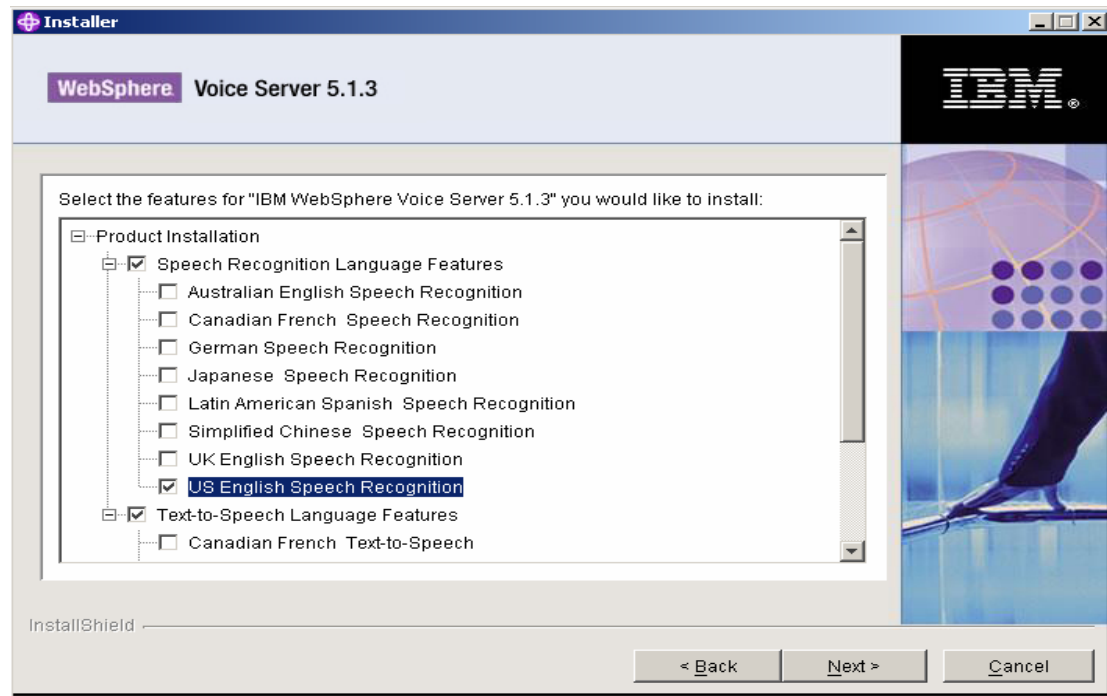
Browse

InstallShield

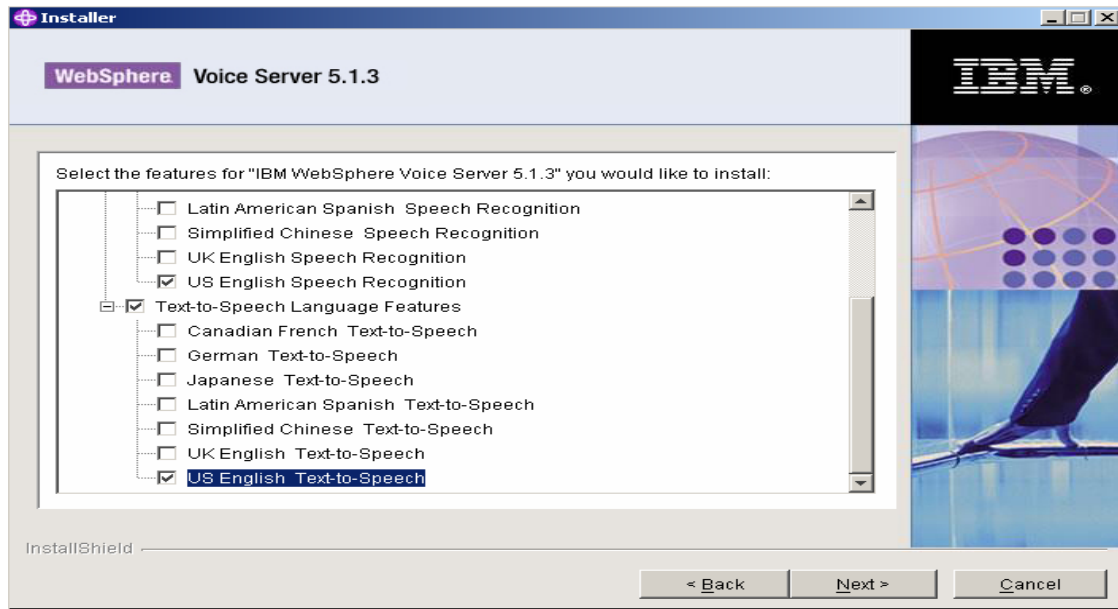
< Back Next > Cancel

**Step 15.** Choose the features that need to be installed for IBM WVS under **Product Installation**. Select the appropriate language in the **Speech Recognition Language Features** as shown below.

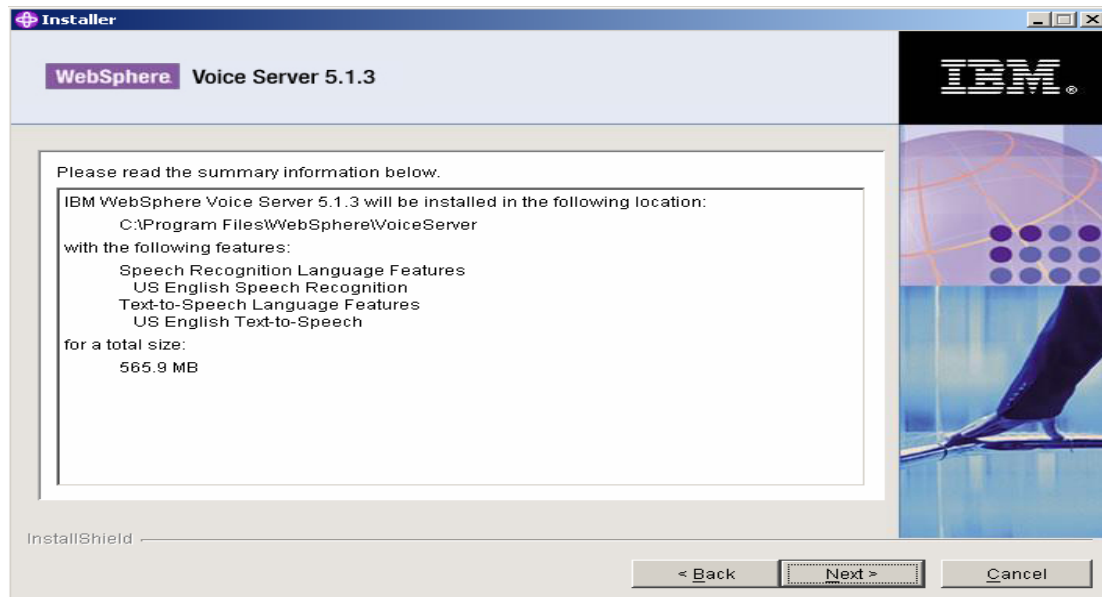
**Note:** This document uses US English as the language for both Speech Recognition and Text-to-Speech.



**Step 16.** Scroll down the screen and select **Text-to-Speech Language Features** as shown below. Select the appropriate language as shown below. Click the **Next** button to proceed.

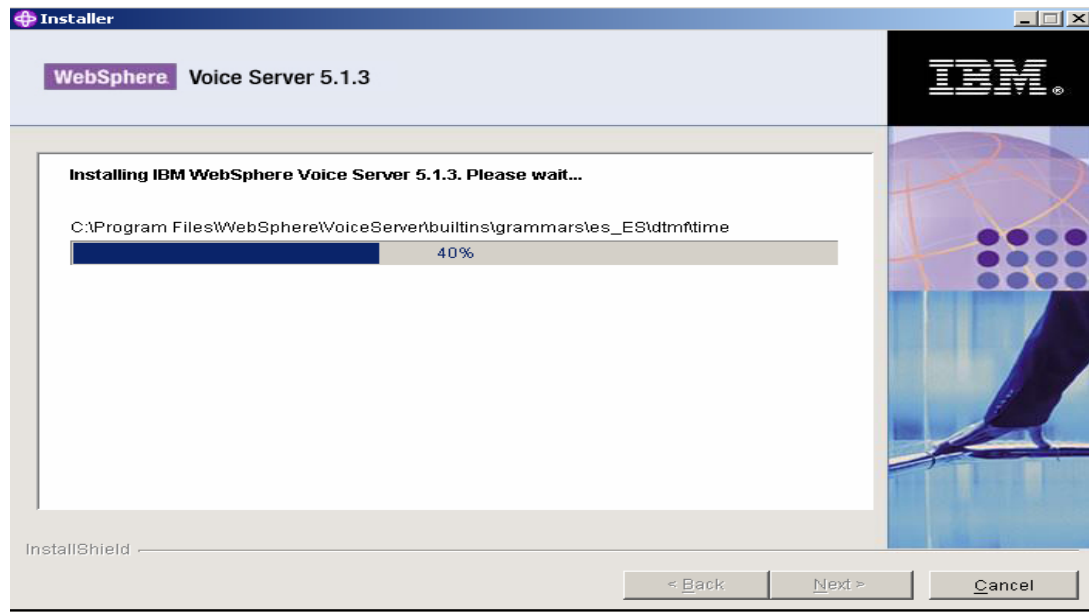


**Step 17.** Review the summary information as shown below and click the **Next** button to proceed.

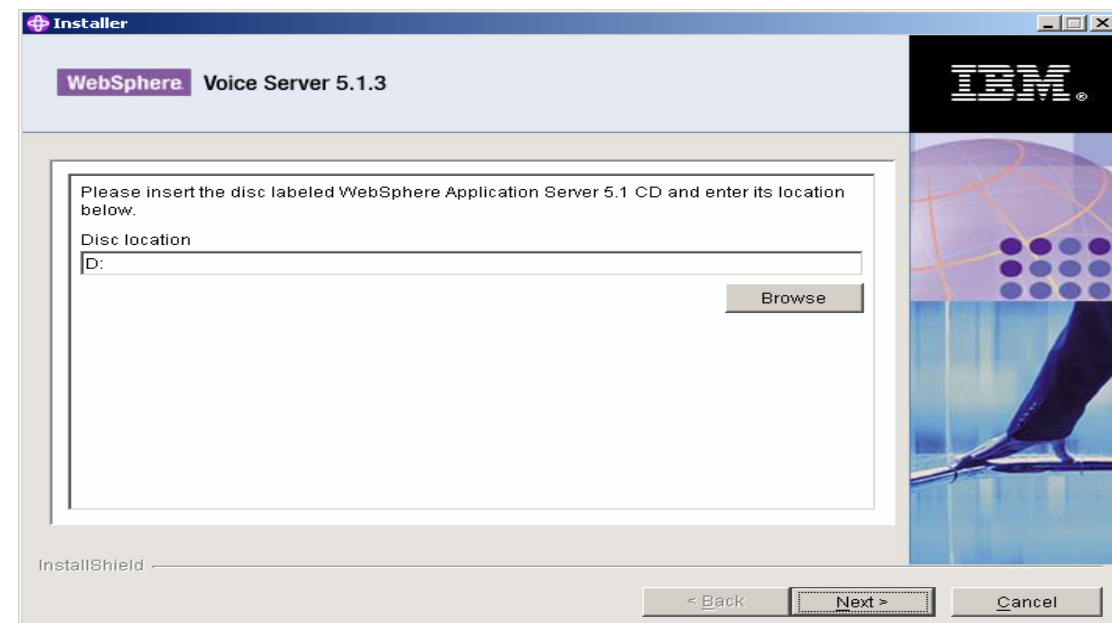




**Step 18.** The IBM WVS 5.1.3 installation screen will be displayed.

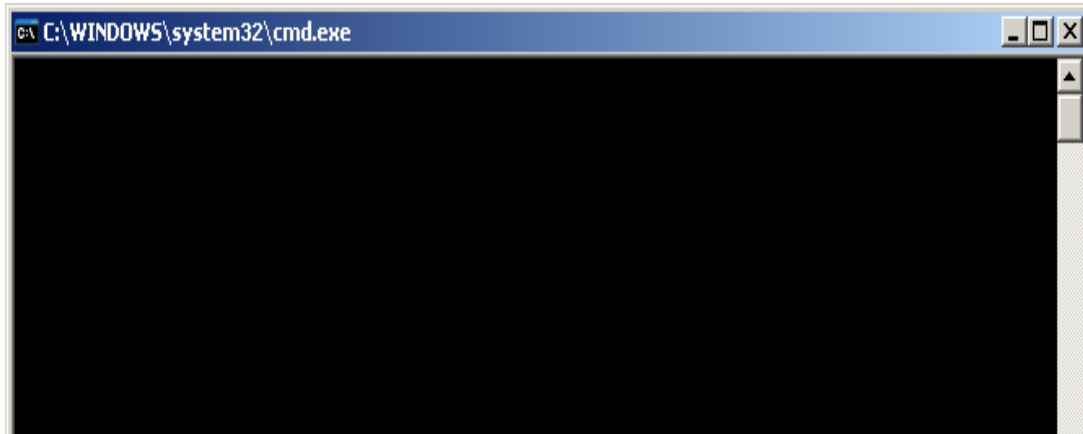


**Step 19.** Start the installation process by entering the root directory of the CD drive as shown below or use the **Browse** button to change to the correct CD drive. Click the **Next** button below to proceed.

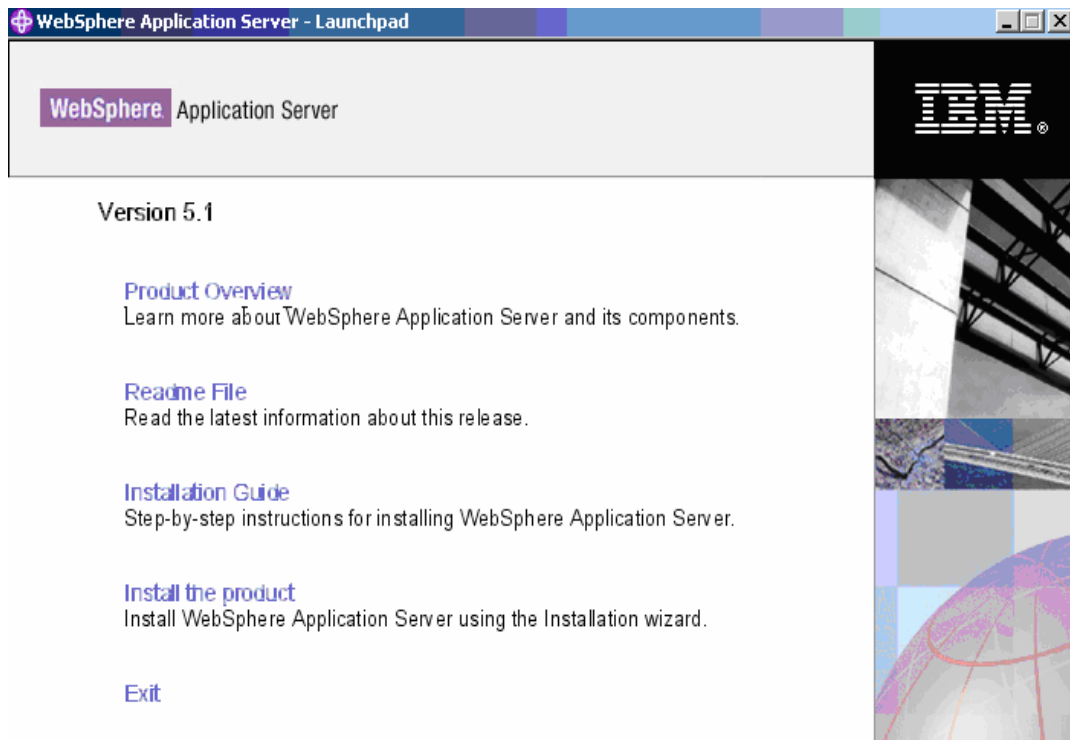


**Step 20.** A blank DOS window will be displayed as shown below indicating that the IBM WAS installation is in progress.

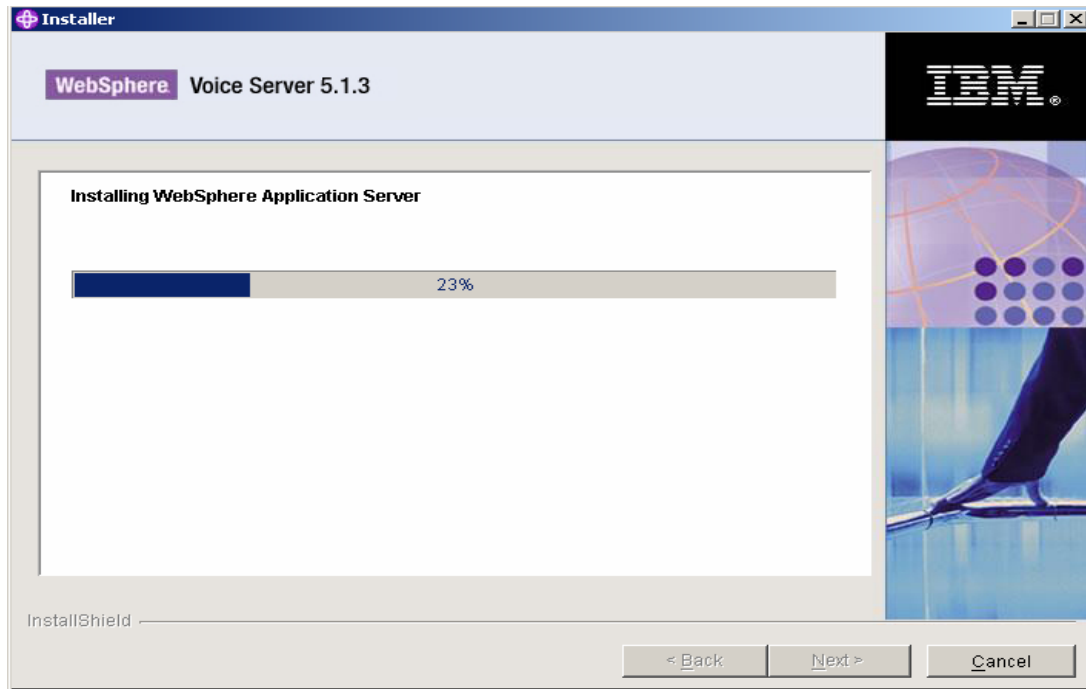
**Note:** There may be a delay of 1-2 minutes before the next installation screen is displayed.



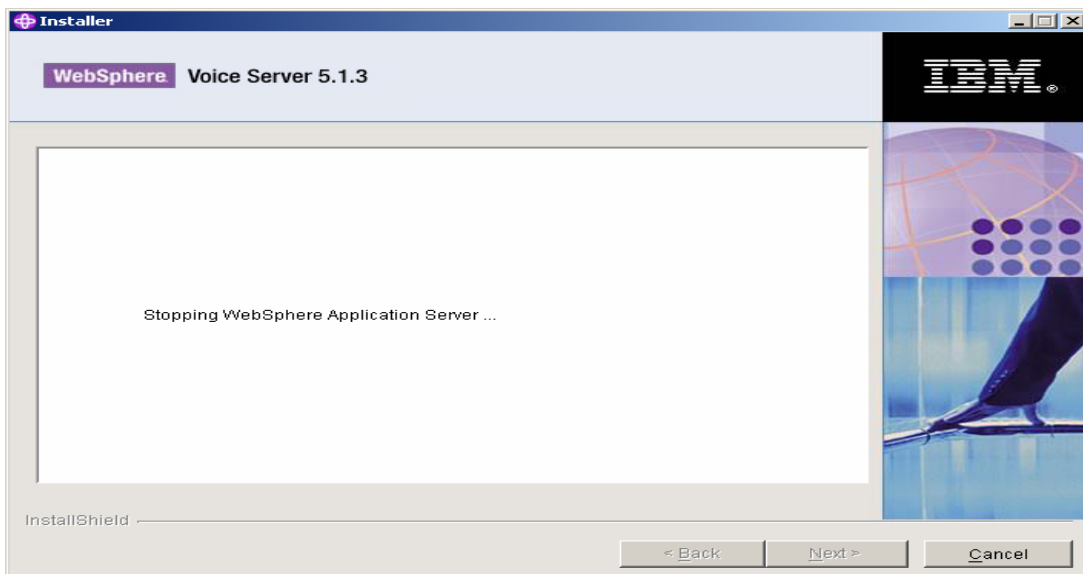
**Step 21.** The IBM WAS installation screen with the following options is displayed as shown below. Click on the ***Install the product*** link below.



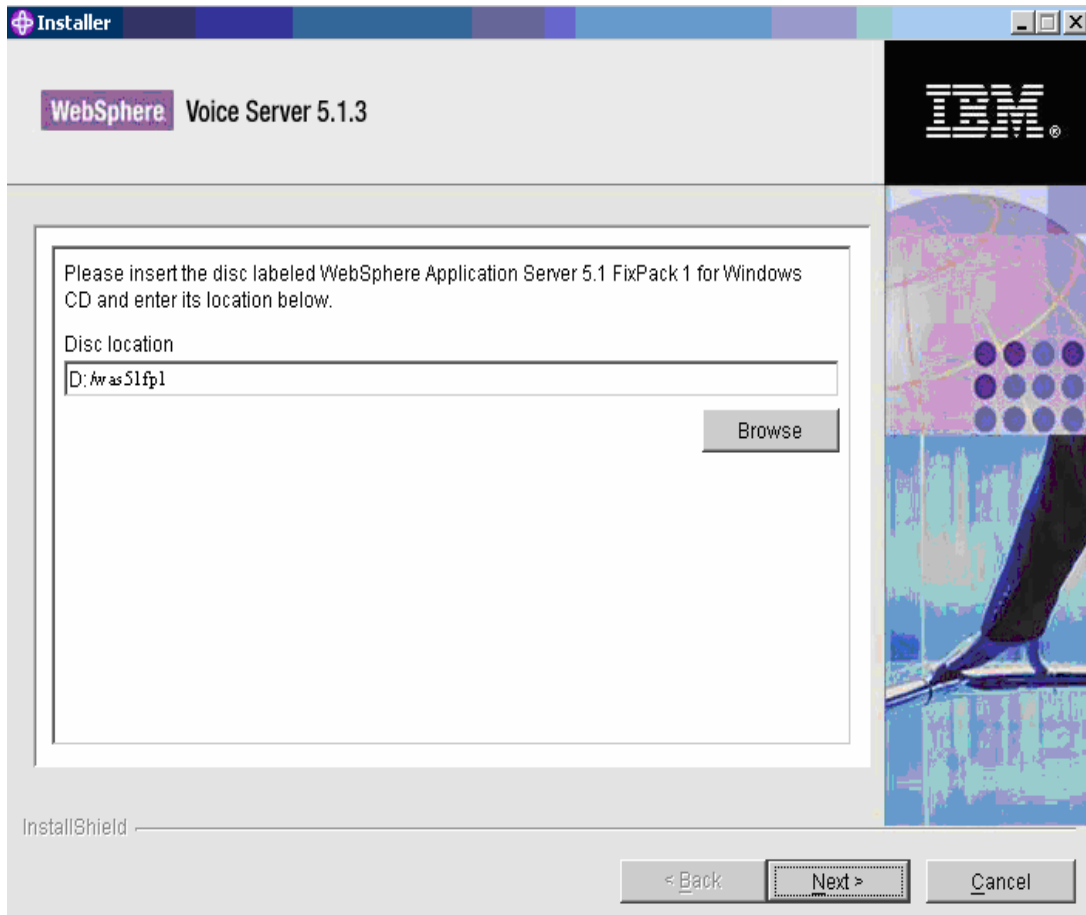
**Step 22.** Next, the IBM WAS installation screen is displayed with the numerical progress bar as shown below.



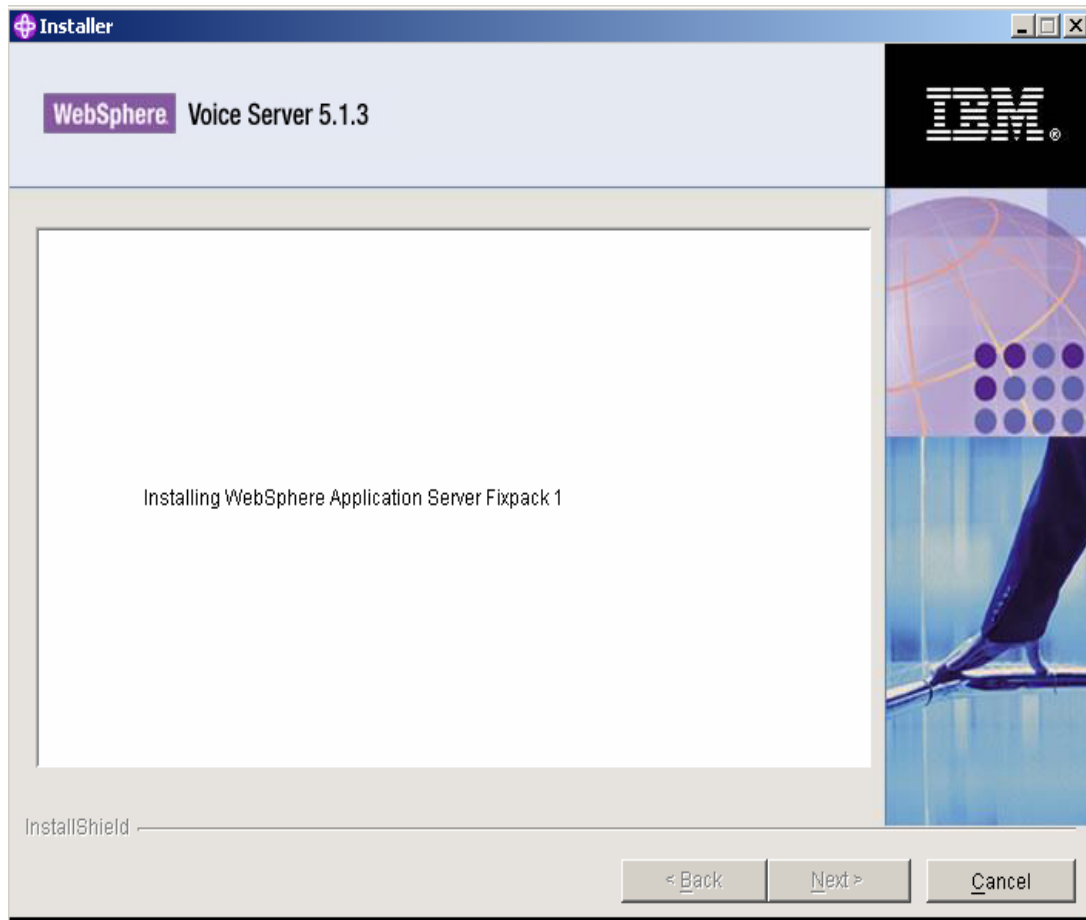
**Step 23.** Once the above IBM WAS installation is complete, the following message is displayed on the screen. Wait until this section of the installation is completed.



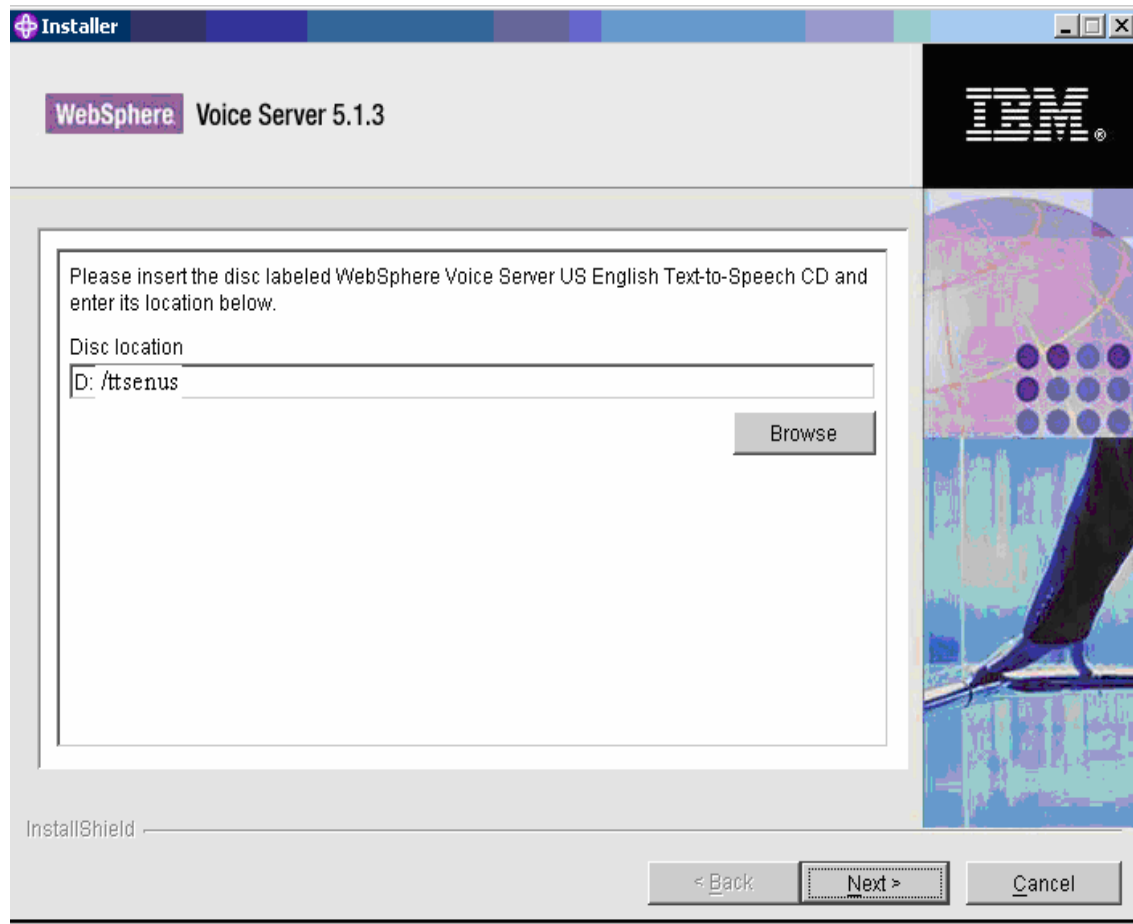
**Step 24.** Insert the IBM WAS FixPack 1 for Windows CD in the CD drive. Start the installation process by typing in the path name to the *was51fp1* folder under the root directory of the CD drive as shown below or use the **Browse** button to locate the folder. Click the **Next** button below to proceed.



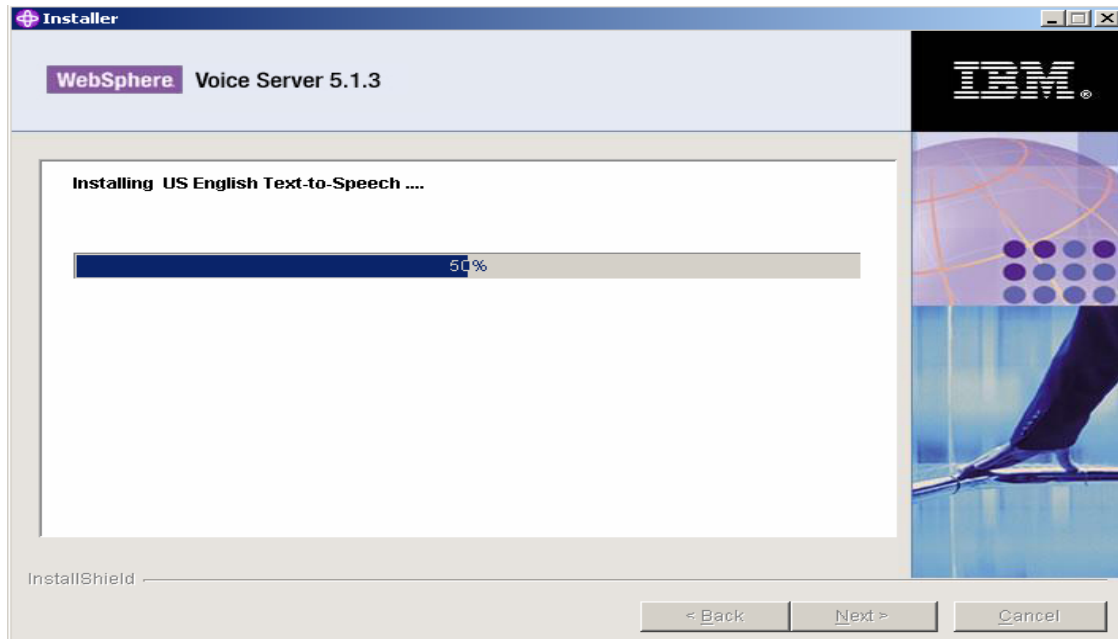
**Step 25.** The IBM WAS FixPack1 installation screen is displayed as shown below. Wait until this section of the installation is completed. No user interaction is required at this time.



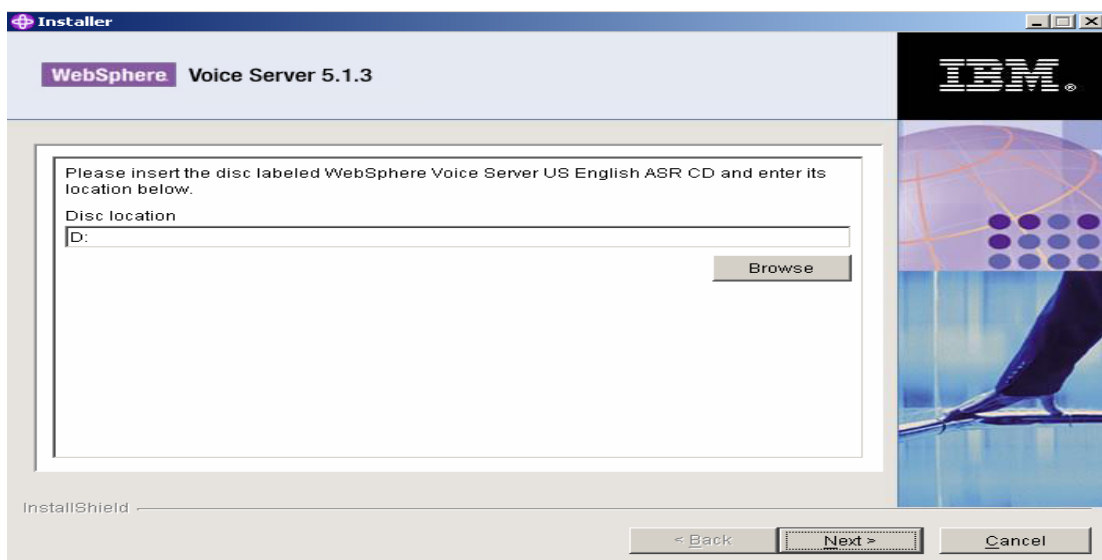
**Step 26.** Insert the IBM WVS US English Text-to-Speech CD in the CD drive. Start the installation process by typing in the path name to the *ttsenus* folder under the root directory of the CD drive as shown below or use the **Browse** button to locate the folder. Click the **Next** button below to proceed.



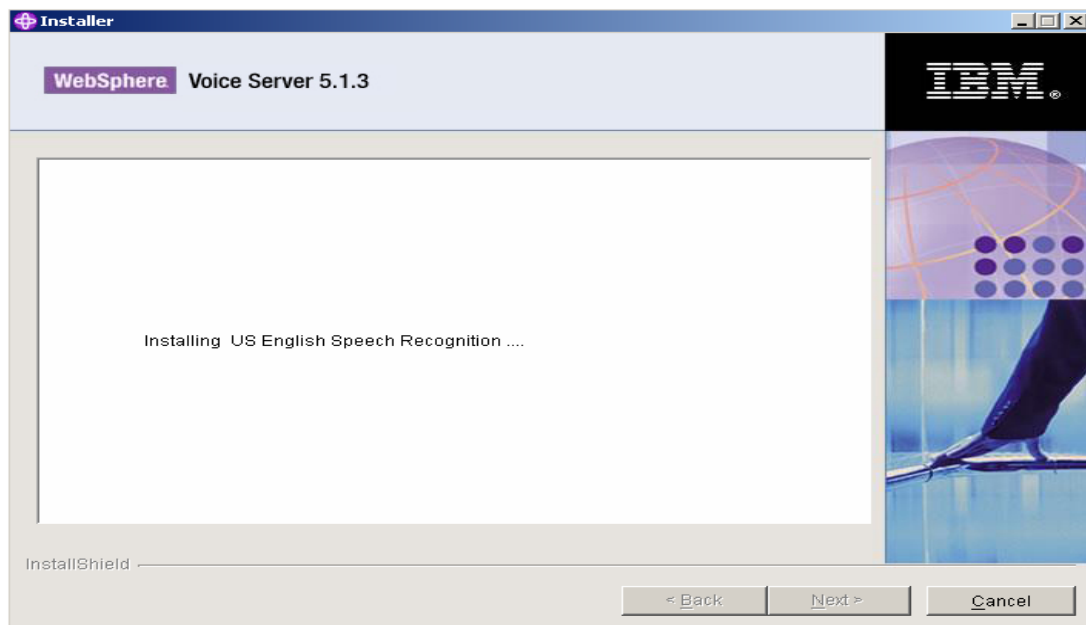
**Step 27.** The IBM WVS US English Text-to-Speech installation screen will be displayed.



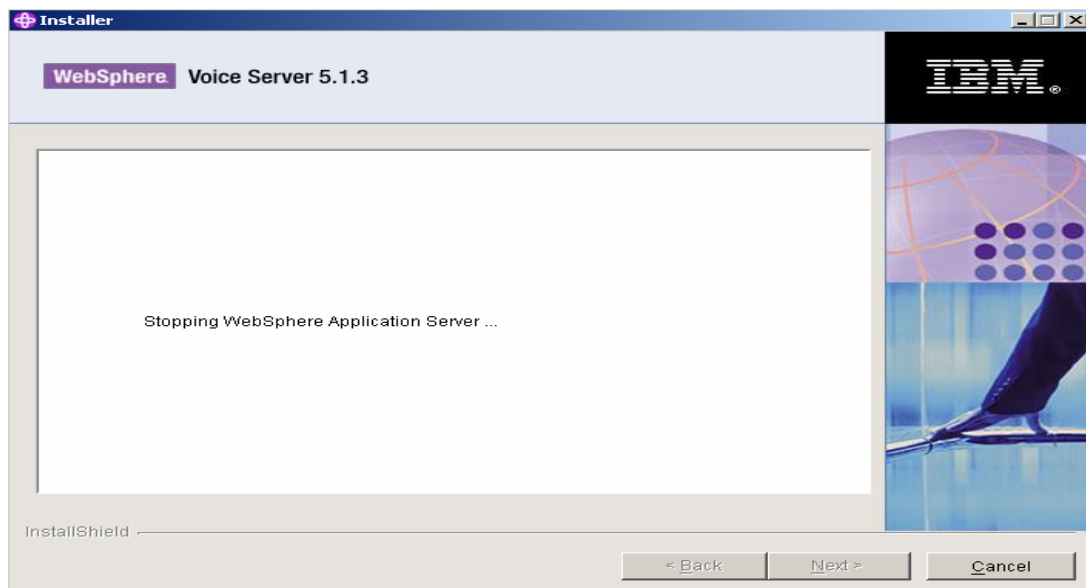
**Step 28.** Insert the IBM WVS US English ASR CD in the CD drive. Start the installation process by typing in the path name to the *asrenus* folder under the root directory of the CD drive as shown below or use the **Browse** button to locate the folder. Click the **Next** button below to proceed.



**Step 29.** The Installer screen will be displayed as shown below. Wait until this section of the installation process is completed. No user interaction is required at this time.

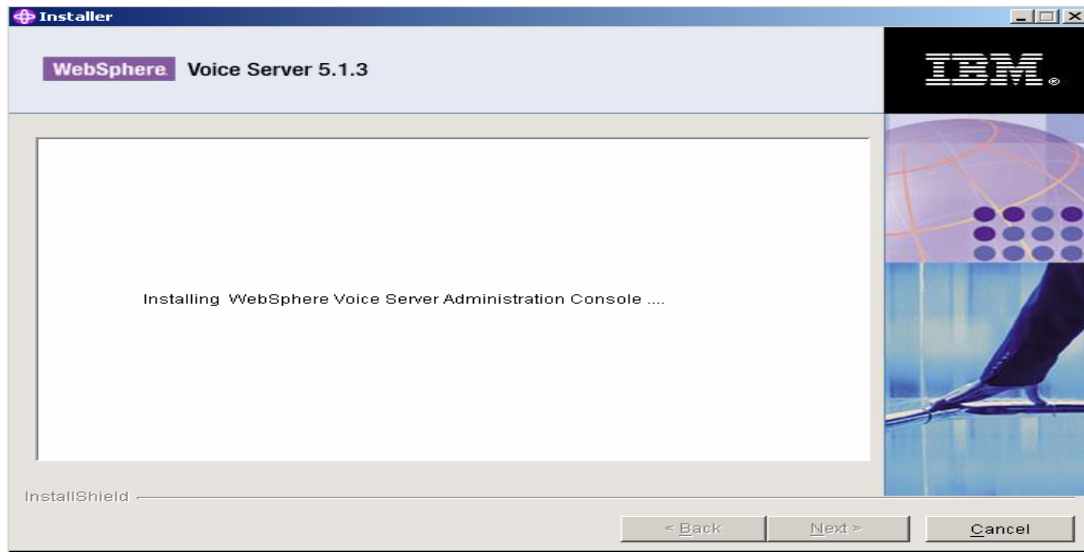


**Step 30.** Once the above IBM WVS US English Speech Recognition installation is complete, the message shown below is displayed on the screen. Wait until this section of the installation process is completed.

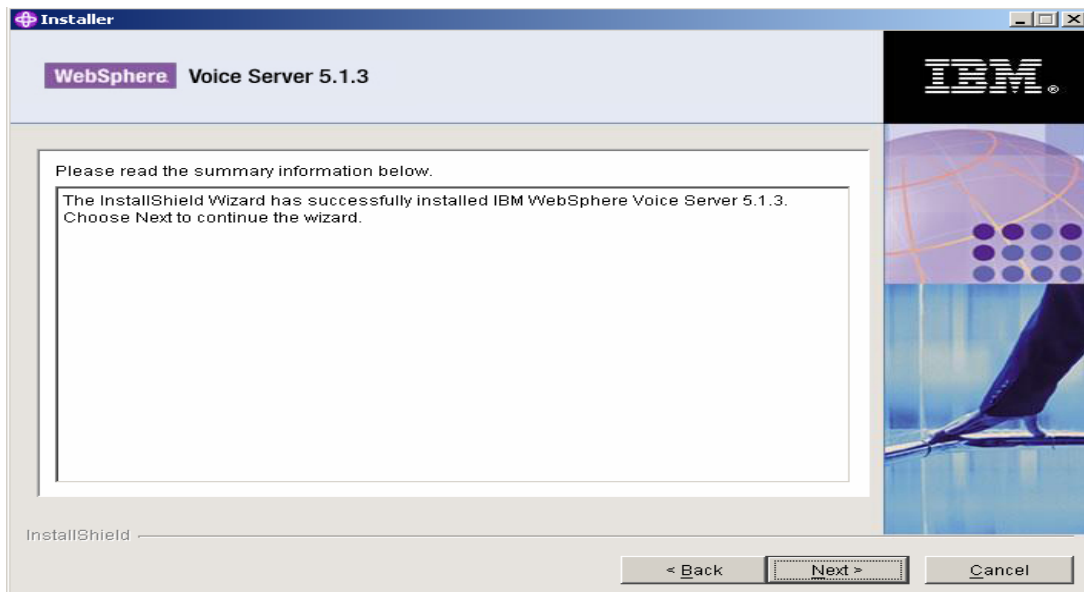




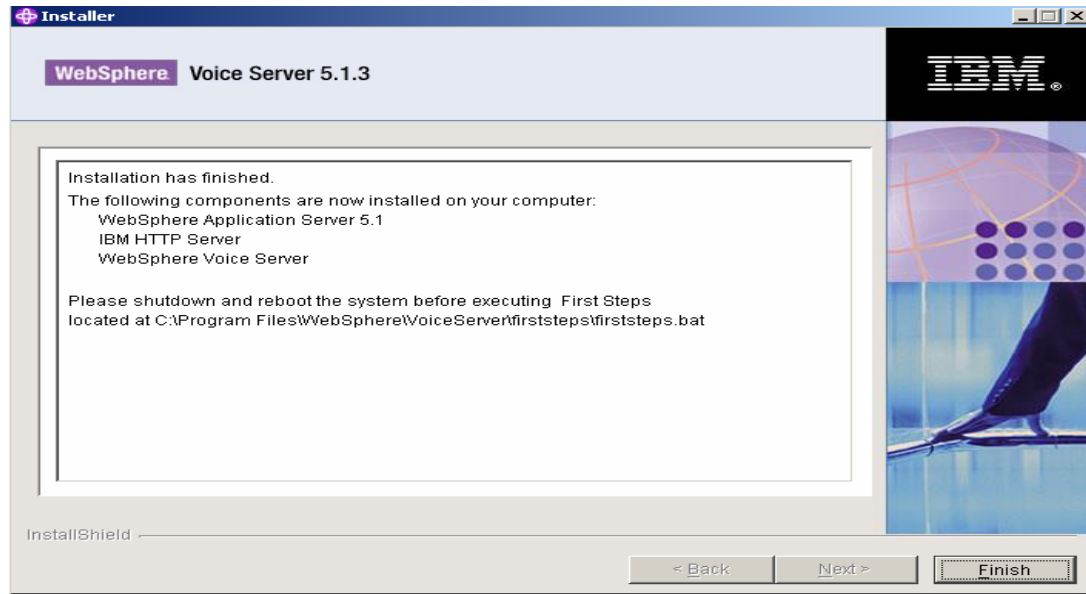
**Step 31.** The message shown below is displayed next on the screen. Wait until this section of the installation is completed. No user interaction is required at this time.  
**Note:** These messages may be displayed on the screen for a couple of minutes while the installation proceeds in the background.



**Step 32.** The IBM WVS installation complete screen is displayed as shown below. Click the **Next** button to proceed.



**Step 33.** A status screen as shown below is displayed indicating that the installation completed successfully. Review and verify the list of components installed. Click the **Finish** button to indicate completion and manually restart the server before proceeding.



## 4.2. Verifying the IBM WVS Server Installation

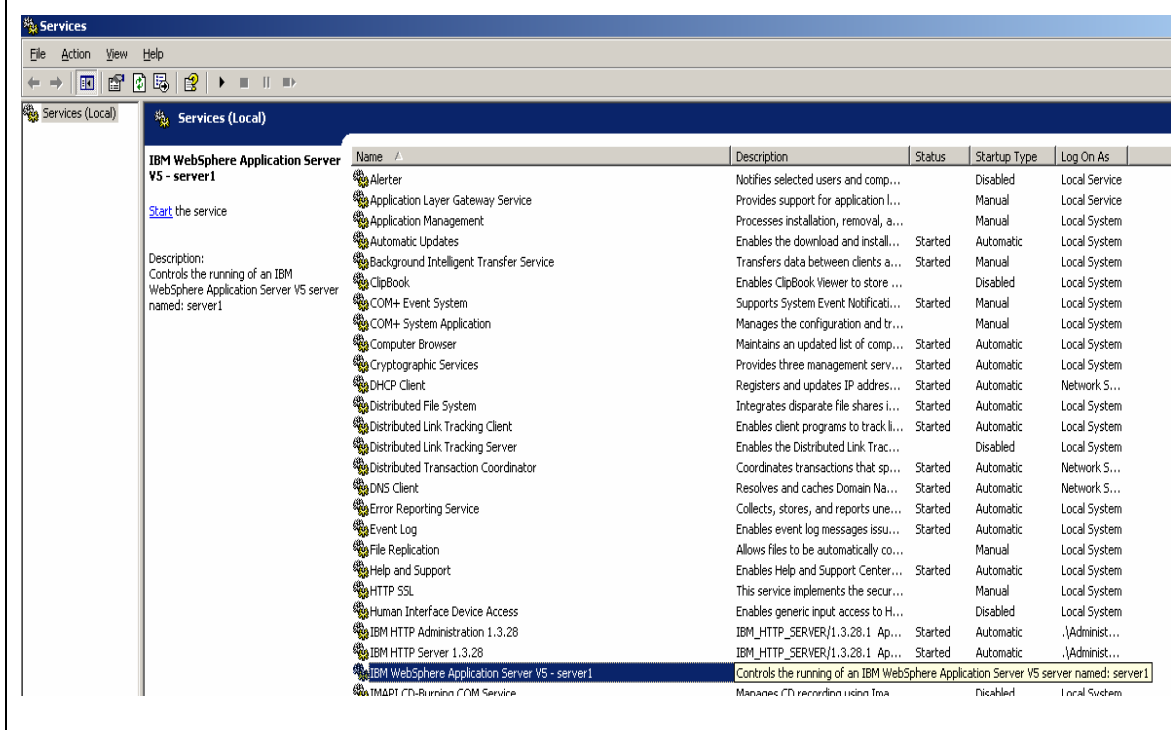
### 4.2.1. Starting IBM WAS Server

The IBM WAS server has to be started before verifying the IBM WVS and ASR and TTS component installations. The IBM WAS server can be started by the following method.

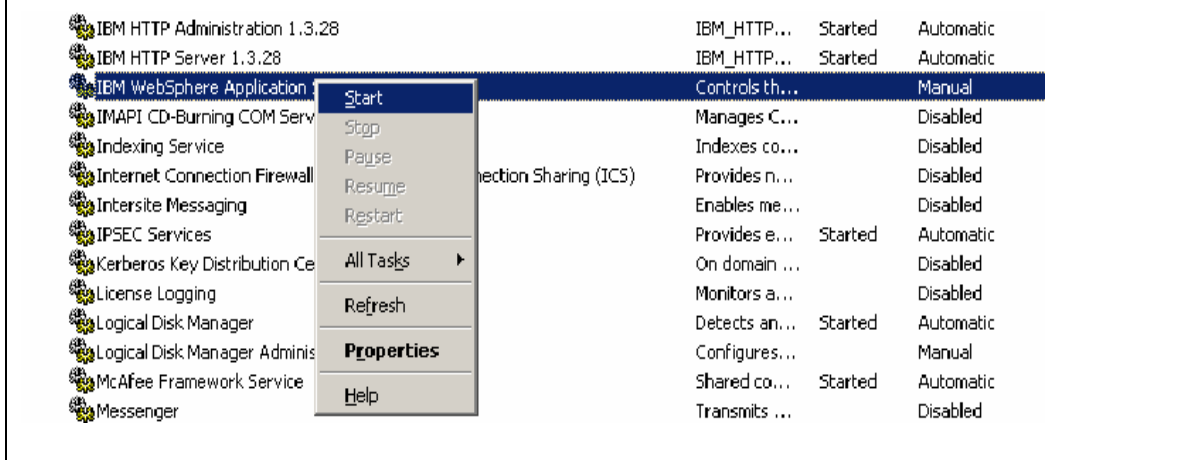
#### A. Using the Windows Service Control Manager (SCM)

**Step 1.** To access the SCM, click on the **Start** button at the bottom of the windows screen. Select **Settings** and click on **Control Panel**. Select **Administrative tools** folder and Click on **Services**. Locate the installed services shown below. Refer to the IBM Documentation before changing the **Startup Type** for the IBM WAS Server from **Manual** to **Automatic**.

**Note:** This service is installed only if the **Run IBM WebSphere Application server as a service** box is checked in Step 12 of Section 4.1



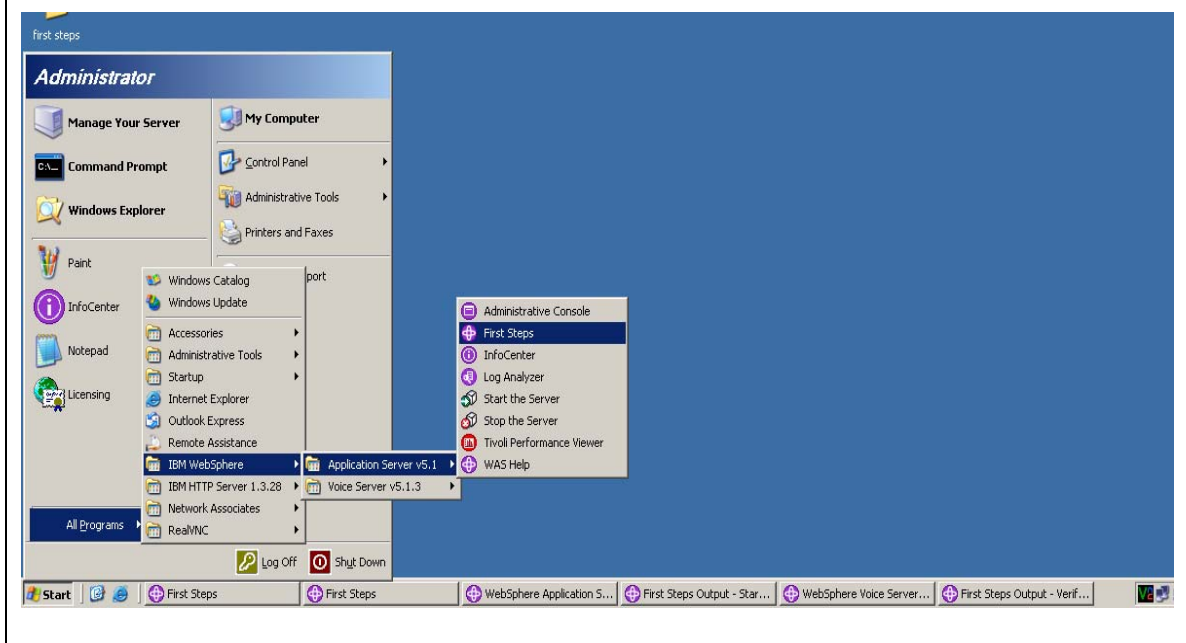
**Step 2.** To start the IBM WAS service, right click on the **IBM WebSphere Application Server V5-server1** service and click on **Start** in the pop up.



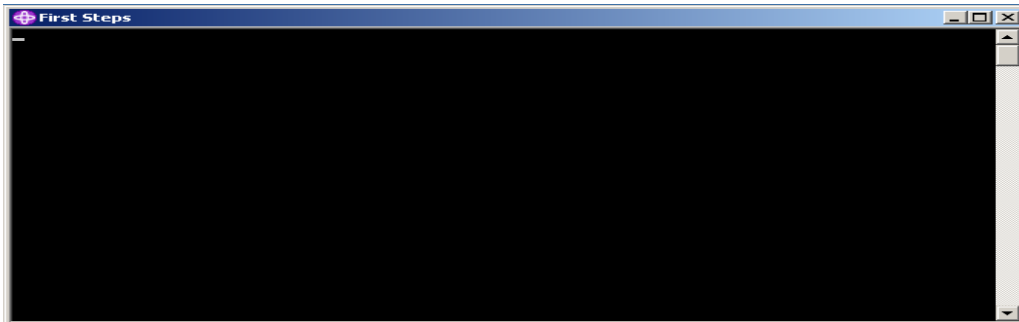
## B. Using 'First Steps' Utility for the IBM WAS Server

Follow the steps below for starting IBM WAS using the **First Steps** utility.

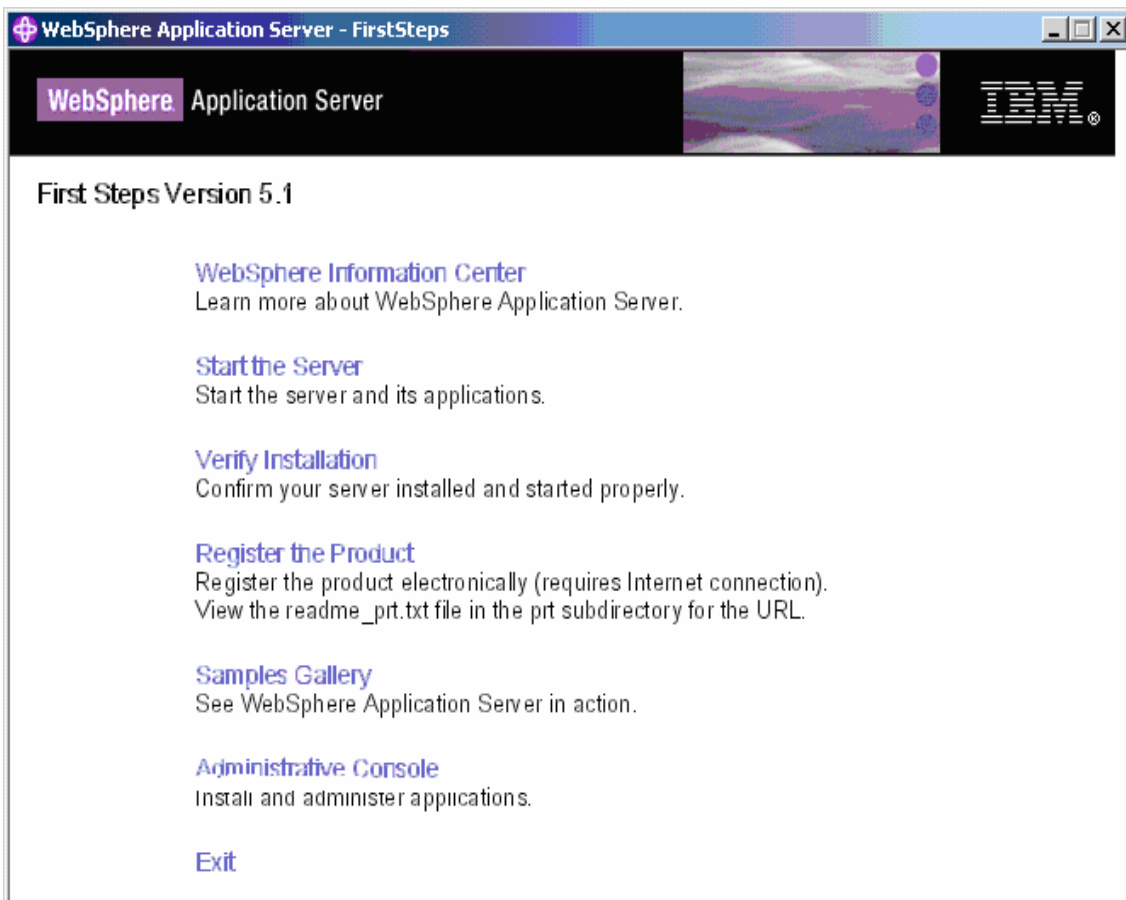
**Step 1.** Click on the **Start** button shown below at the bottom left hand corner and select **All programs** in the menu. Click on **IBM Websphere** and select **Application Server v5.1**. Click on **First steps** in the pop up sub menu as shown below.



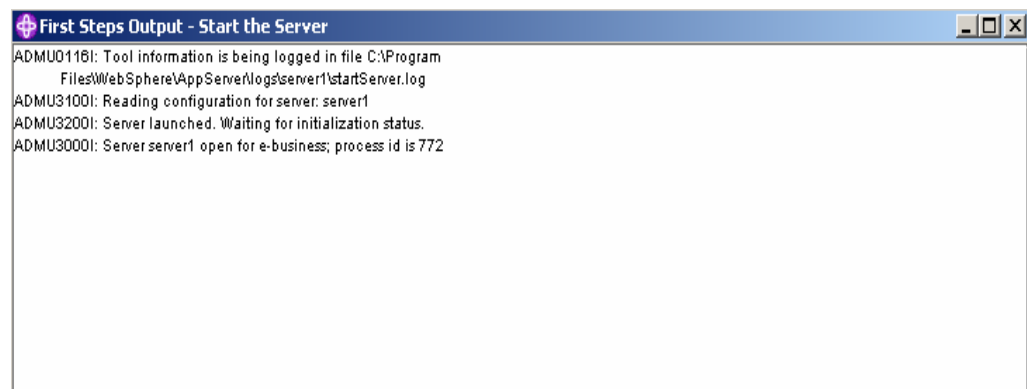
**Step 2.** A DOS screen as shown below is displayed. Wait for 1-2 minutes as no user interaction is required at this time.



**Step 3.** The screen *WebSphere Application Server – FirstSteps Version 5.1* as shown below will be displayed. Click on *Start the Server* to start IBM WAS.



**Step 4.** The status screen shown below is displayed. The message '*server <servername> open for e-business*' indicates that IBM WAS is started successfully.



### 4.3. Installing and Configuring 'Client' Packages on the Avaya Interactive Response for Connecting to IBM WVS

The following packages must be installed on the Avaya Interactive Response to support MRCP connectivity.

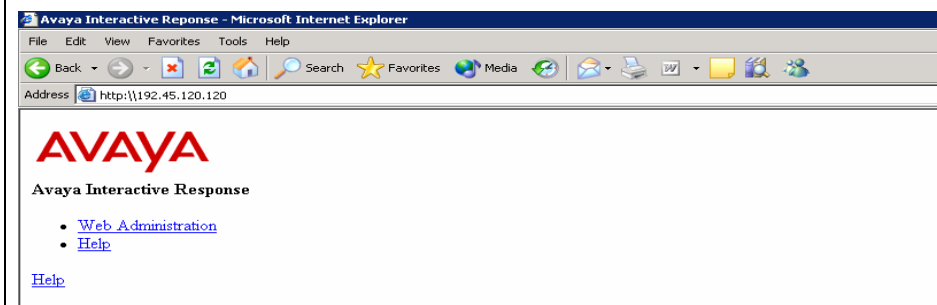
1. **AVmrcpasr** – MRCP ASR Proxy.
2. **AVmrcptts** – MRCP TTS Proxy.

Additional patches for the above packages and instructions for installing them can be obtained from <http://support.avaya.com> under the Interactive Response section. The above Client packages provide connectivity from the Avaya Interactive Response system to any Speech Recognition and Text-to-Speech engines supporting the MRCP feature.

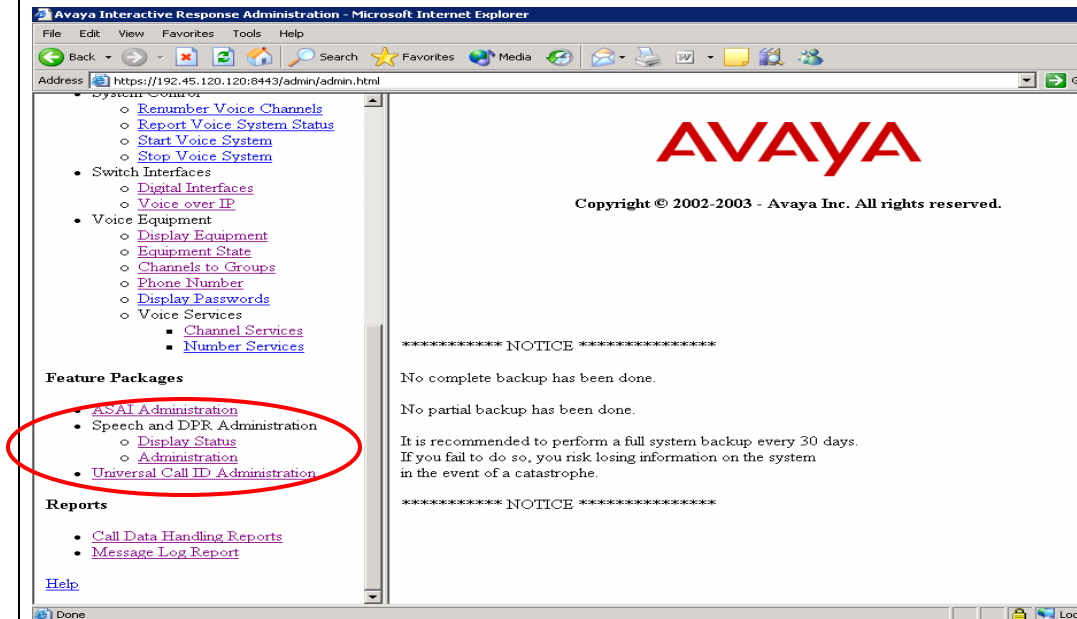
Refer to Section 3.1 for installing the above packages.

### 4.4. Configuring Media Resource Control Protocol (MRCP) Advanced Speech Recognition (ASR) Client Package through Avaya Interactive Response Web Administration

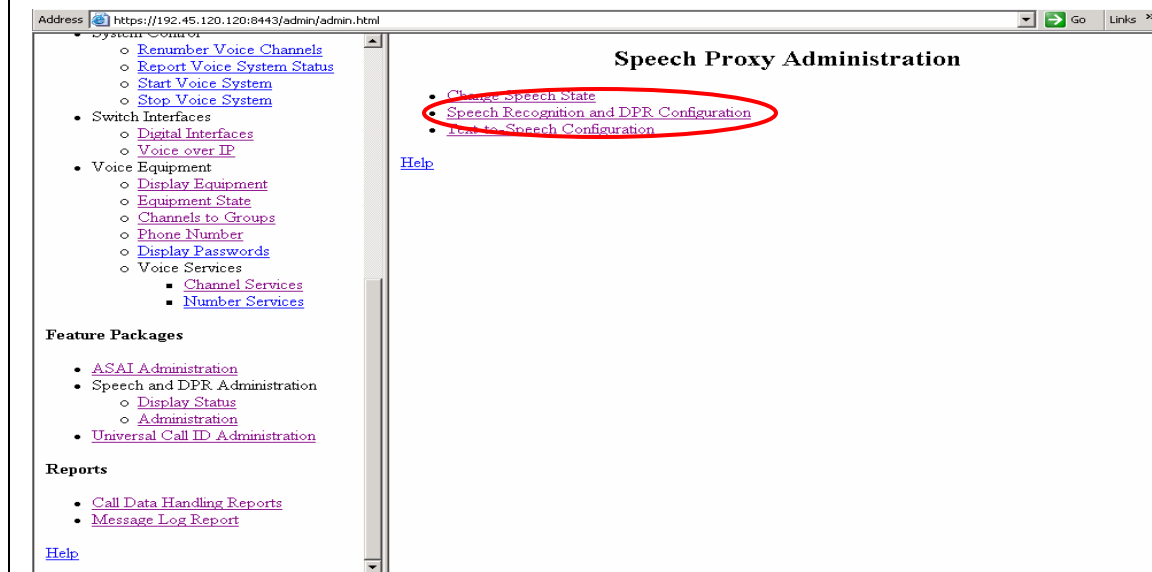
**Step 1.** Open any web browser and login to the web administration screen by typing '*http://<IP address of Avaya Interactive Response server>*' as shown below.



**Step 2.** Type in the root username and password. If the base Speech packages mentioned above are installed correctly then the *Speech and DPR Administration* should be seen under the *Feature Packages* section as shown below.

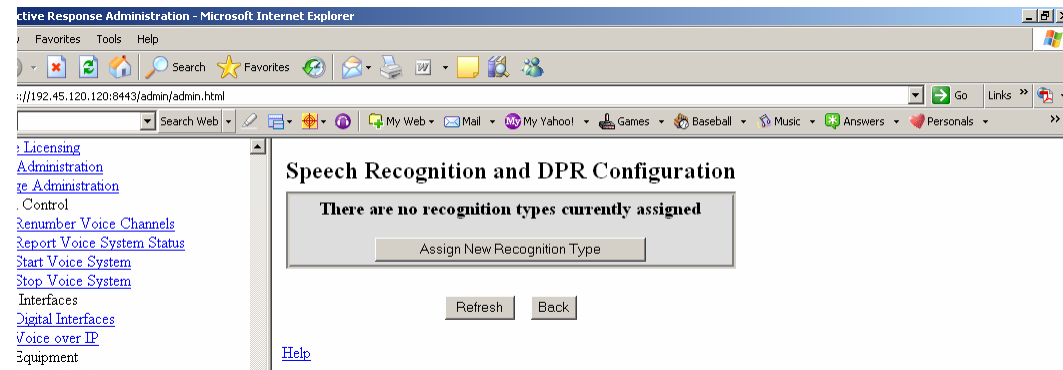


**Step 3.** Access the *Speech Proxy Administration* page by clicking on the *Administration* link below *Speech and DPR Administration* section. Click on the Speech Recognition and DPR Configuration link.

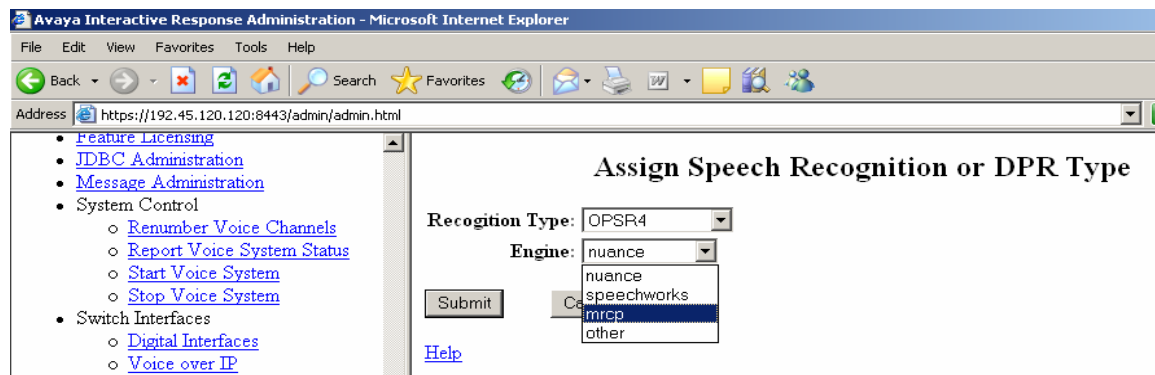




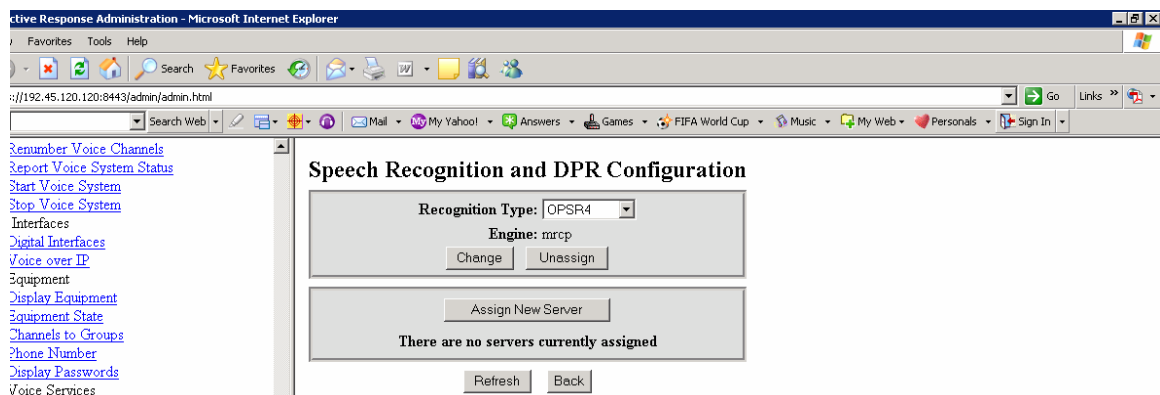
**Step 4.** Click on the **Assign New Recognition Type** button shown below



**Step 5.** Select *mrcp* from the *Engine* drop combo box as shown below.



**Step 6.** Click on the **Assign New Server** button shown below.



**Step 7.** Enter the appropriate values in the *Server Name*, *IP Address*, *Ports* and *Base Port* fields as shown below. Use the default value for the *Recognition Type* displayed by the system. Press the **Submit** button to save the values entered.

**Note:** The value of number of ports in the *Ports* field should not exceed the total number of licensed ports. The *Base Port* for connecting to IBM WVS ASR is 554.

The screenshot shows a Microsoft Internet Explorer window with the address bar displaying 'https://192.45.120.120:8443/admin/admin.html'. The left sidebar contains a navigation menu with links such as 'Administration', 'System Control', 'Renum Voice Channels', 'Report Voice System Status', 'Start Voice System', 'Stop Voice System', 'Interfaces', 'Digital Interfaces', 'Voice over IP', 'Equipment', 'Display Equipment', 'Equipment State', and 'Channels to Groups'. The main content area is titled 'Assign Speech Recognition or DPR Server'. It contains the following fields:

- Recognition Type:** A dropdown menu showing 'OPSR4'.
- Server Name:** A text box containing '192.45.120.239/media'.
- IP Address:** A text box containing '192.45.120.239'.
- Ports:** A text box containing '5'.
- Base Port:** A text box containing '554'.

At the bottom of the form are three buttons: 'Submit', 'Reset', and 'Cancel'.

**Step 8.** The final configuration screen is shown below. Stop and start the voice system to enable the connections to the IBM WVS ASR server.

The screenshot shows the 'Text-to-Speech Configuration' screen in the Avaya Interactive Response Administration web interface. The address bar displays 'https://192.45.120.120:8443/admin/admin.html'. The left sidebar is expanded, showing a tree view with categories like 'JDBC Administration', 'Message Administration', 'System Control', 'Switch Interfaces', 'Voice Equipment', and 'Feature Packages'. The main content area is titled 'Text-to-Speech Configuration' and includes a message: 'The change succeeded, please stop and restart the voice system.' Below this message are several configuration sections:

- Default Voice:** A text box showing 'allison' with a 'Change' button next to it.
- Text-to-Speech Type:** A dropdown menu showing 'TTS0'.
- Engine:** A text box showing 'mrccp' with 'Change' and 'Unassign' buttons next to it.
- Assign New Server:** A section containing a table with the following fields:
 

Server Name:	192.45.120.239/media
IP Address:	192.45.120.239
Ports:	2
Base Port:	554

 Below the table are 'Change' and 'Unassign' buttons.

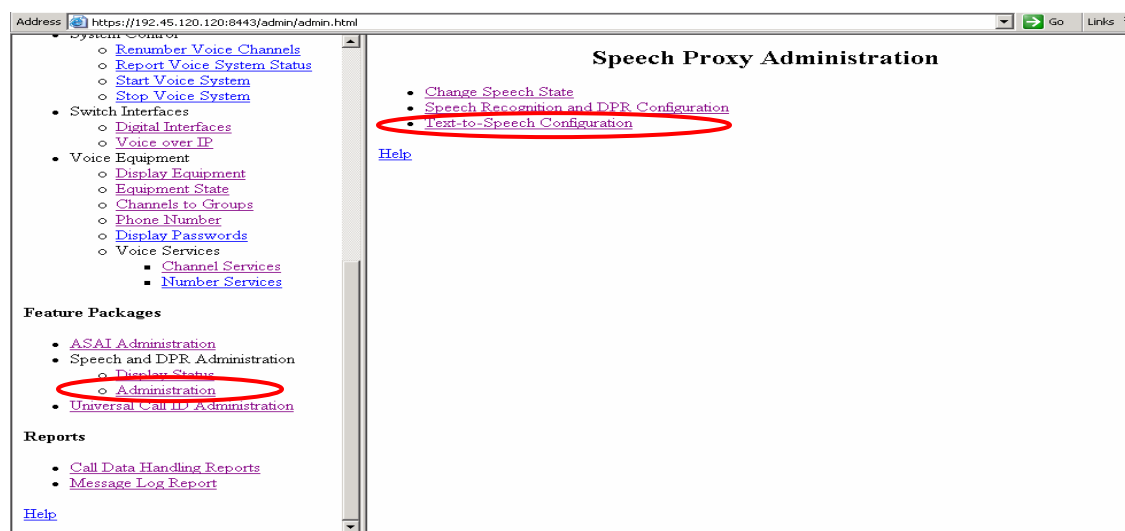
At the bottom of the configuration area are 'Refresh' and 'Back' buttons.

**Step 9.** Refer to Section 3.2 for stopping and starting the voice system to apply the above configuration changes.

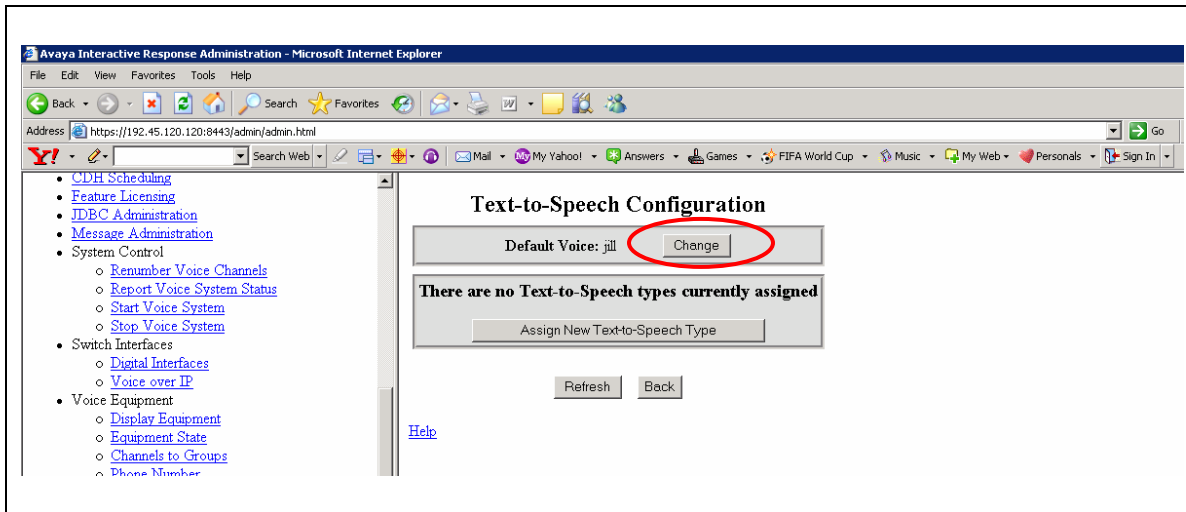
#### 4.5. Configuring Media Resource Control Protocol (MRCP) Text-to-Speech (TTS) Client Package through Avaya Interactive Response Web Administration

**Step 1.** Log into web administration by opening any web browser and typing the IP address of the Avaya Interactive Response system as shown below '*http://<IP address of Avaya Interactive Response server>*'.

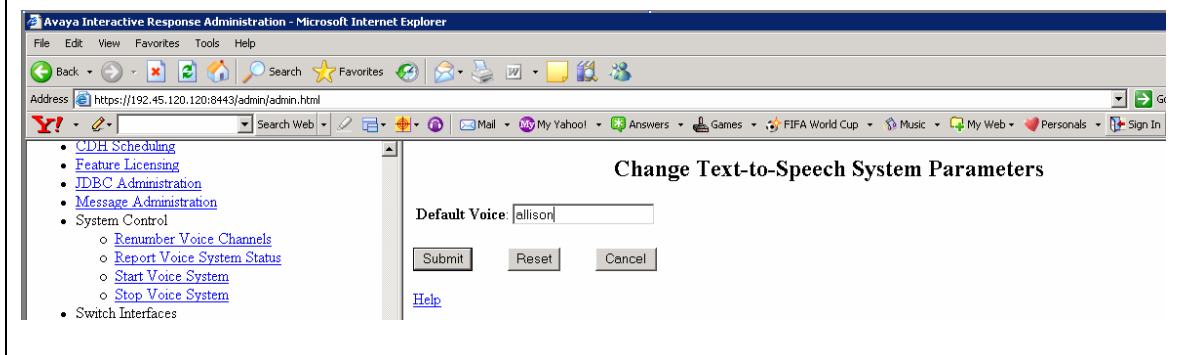
Click on **Administration** under the **Speech and DPR Administration** section. Click on the **Text-to-Speech Configuration** link as shown below.



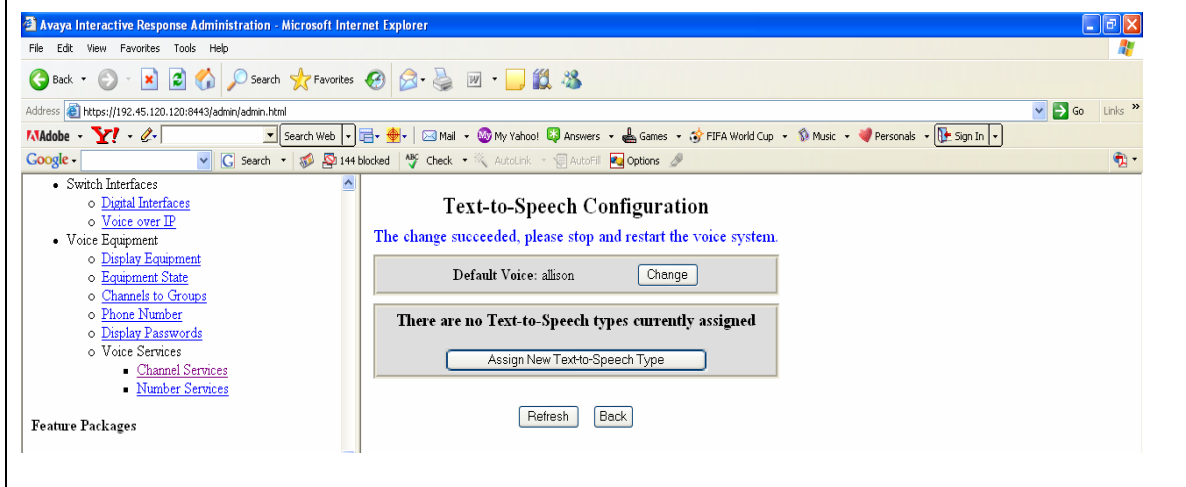
**Step 2.** Click on the **Change** button as shown below to set the **Default Voice** to the voice supported by the IBM WVS TTS engine.



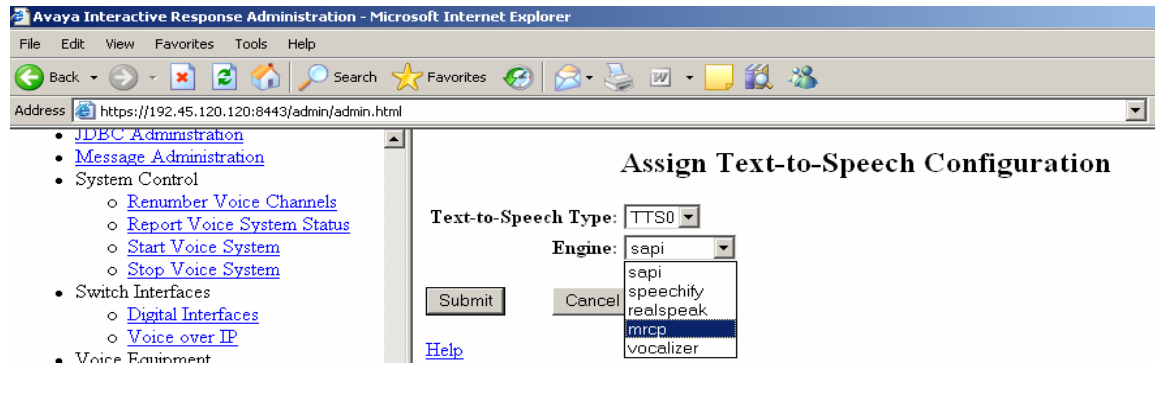
**Step 3.** Enter the voice name in the *Default Voice* field as shown below. Click the **Submit** button to apply the changes.



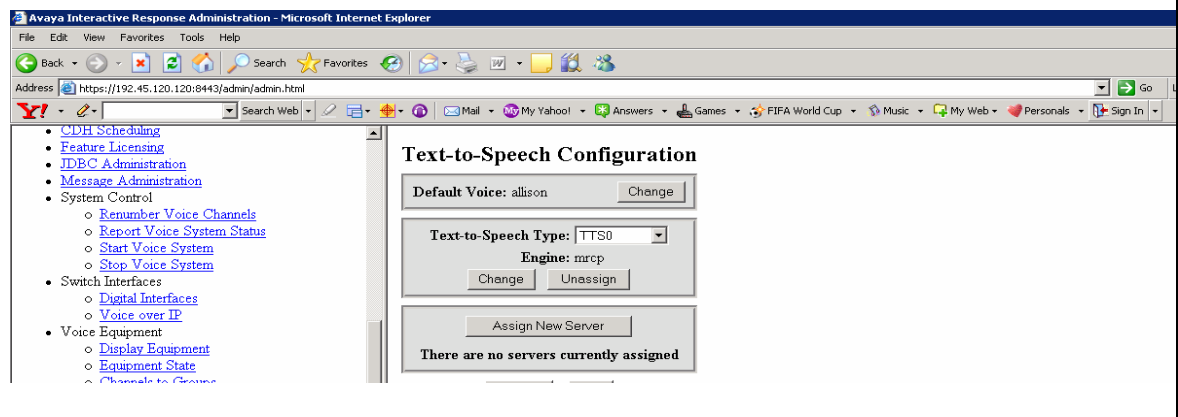
**Step 4.** Click on the **Assign New Text-to-Speech Type** button shown below.



**Step 5.** Select *mrcp* from the drop down box as shown below and click the **Submit** button.



**Step 6.** Click on the **Assign New Server** button to assign a Text –to-Speech server.



**Step 7.** Enter the appropriate values in the *Server Name*, *IP Address*, *Ports* and *Base Port* fields as shown below. Click the **Submit** button to apply the changes.

**Note:** The value of number of ports in the *Ports* field should not exceed the total number of licensed ports. The value of the *Base Port* for connecting to IBM WVS TTS is 554.

The screenshot shows the 'Assign Text-to-Speech Server' configuration page in the Avaya Interactive Response Administration web interface. The left sidebar contains a navigation menu with links such as 'CDH Scheduling', 'Feature Licensing', 'JDBC Administration', 'Message Administration', 'System Control', 'Switch Interfaces', and 'Voice Equipment'. The main content area has the title 'Assign Text-to-Speech Server'. Below the title, there are several input fields: 'Text-to-Speech Type' (set to TTS0), 'Engine' (set to mrccp), 'Server Name' (192.45.120.239/media), 'IP Address' (192.45.120.239), 'Ports' (5), and 'Base Port' (554). At the bottom of the form are 'Submit', 'Reset', and 'Cancel' buttons, along with a 'Help' link.

**Step 8.** The *Text-to-Speech Configuration* screen with the necessary settings is shown below. Stop and start the voice system to enable the connections to the IBM WVS TTS server.

The screenshot shows the 'Text-to-Speech Configuration' page in the Avaya Interactive Response Administration web interface. The left sidebar contains a navigation menu with links such as 'Start Voice System', 'Stop Voice System', 'Switch Interfaces', 'Voice Equipment', 'Feature Packages', and 'Reports'. The main content area has the title 'Text-to-Speech Configuration' and a message: 'The change succeeded, please stop and restart the voice system.' Below the message, there are several sections: 'Default Voice' (allison), 'Text-to-Speech Type' (TTS0), 'Engine' (mrccp), and 'Assign New Server'. The 'Assign New Server' section contains a table with the following data:

Server Name:	192.45.120.239/media
IP Address:	192.45.120.239
Ports:	5
Base Port:	554

At the bottom of the form are 'Refresh' and 'Back' buttons, along with a 'Help' link.

**Step 9.** Follow the steps detailed in Section 3.2 to stop and start the voice system.

**Step 10.** Refer to Section 5.2 for using the Avaya *vxmIFeatureTest.vxmI* application to verify IBM WVS ASR and TTS functionality.

### 5.1. Verifying Speech Recognition and Text-to-Speech Packages

The connections between the IBM WVS ASR, TTS server and the Avaya Interactive Response can be verified by the following methods below.

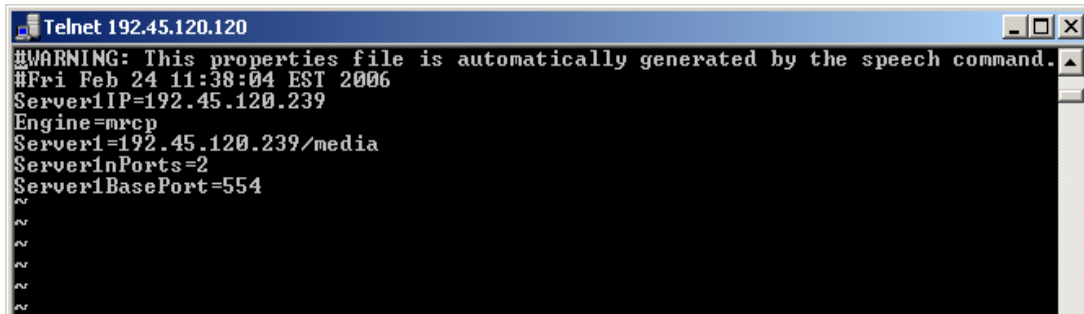
### 5.1.1. Check Configuration File Settings

**Step 1.** Use a telnet program to access the Avaya Interactive Response system by typing in the command line ‘telnet <IP address of the Avaya Interactive Response server>’. Enter the login and password.

**Step 2.** Once logged in, change to the following directory by typing 'cd /vs/sproxy/cfg'. Type 'ls' at the command prompt to view the contents of the directory as shown below.

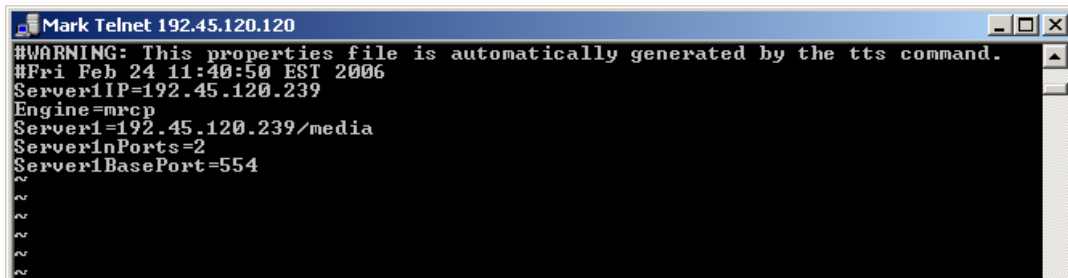
[illegible]

**Step 3.** Check the ASR settings by locating the file named with the recognition type selected during configuration. Locate and open the file. For example, if the recognition type is **OPSR4** then the file name would be **OPSR4.cfg**. The connection settings are as shown below.

A screenshot of a Telnet window titled 'Telnet 192.45.120.120'. The window displays the following text: '#WARNING: This properties file is automatically generated by the speech command.', '#Fri Feb 24 11:38:04 EST 2006', 'Server1IP=192.45.120.239', 'Engine=mrsp', 'Server1=192.45.120.239/media', 'ServerInPorts=2', 'Server1BasePort=554', and several tilde characters (~) indicating a continuation of the file.

```
Telnet 192.45.120.120
#WARNING: This properties file is automatically generated by the speech command.
#Fri Feb 24 11:38:04 EST 2006
Server1IP=192.45.120.239
Engine=mrsp
Server1=192.45.120.239/media
ServerInPorts=2
Server1BasePort=554
~
~
~
~
~
```

**Step 4.** Check the TTS settings by locating the file with the Text-to-Speech type selected during configuration. Locate and open the file. For example, if the recognition type is **TTS0**, then the file name would be **TTS0.cfg**. The connection settings are as shown below.

A screenshot of a Mark Telnet window titled 'Mark Telnet 192.45.120.120'. The window displays the following text: '#WARNING: This properties file is automatically generated by the tts command.', '#Fri Feb 24 11:40:50 EST 2006', 'Server1IP=192.45.120.239', 'Engine=mrsp', 'Server1=192.45.120.239/media', 'ServerInPorts=2', 'Server1BasePort=554', and several tilde characters (~) indicating a continuation of the file.

```
Mark Telnet 192.45.120.120
#WARNING: This properties file is automatically generated by the tts command.
#Fri Feb 24 11:40:50 EST 2006
Server1IP=192.45.120.239
Engine=mrsp
Server1=192.45.120.239/media
ServerInPorts=2
Server1BasePort=554
~
~
~
~
~
```

### 5.1.2. Verifying Connectivity Using 'sproxyadm' Command

The 'sproxyadm' command is used to administer proxy speech resources. Follow the steps below to use the 'sproxyadm' command to view ASR and TTS resources.

**Step 1.** Use the telnet program to access the Avaya Interactive Response system by typing in the command line 'telnet <IP address of the Avaya Interactive Response server>'. Enter the login and password.



**Step 2.** At the command line type ‘sproxyadm -r ALL -d’ to view all active resources and verify that the ASR and TTS ports are active as shown below.

**Note:** Type ‘sproxyadm’ at the command line to view the description of all available options.

```

Telnet 192.45.120.120
speechir(root)# sproxyadm -r ALL -d
RESOURCES: TTS
Default Voice: allison

ALL SERVERS SUMMARY      TOTAL PORTS AVAILABLE: 2
SERVER: 192.45.120.239/media  IP: 192.45.120.239
PORT CAPACITY: 2      PORTS AVAILABLE: 2

PORT  STATE  CHAN
-----
0     INSERU  N/A
1     INSERU  N/A

RESOURCE: OPSR4 SUMMARY    PORTS AVAILABLE: 2
SERVER: 192.45.120.239/media  IP: 192.45.120.239
PORT CAPACITY: 2      PORTS AVAILABLE: 2

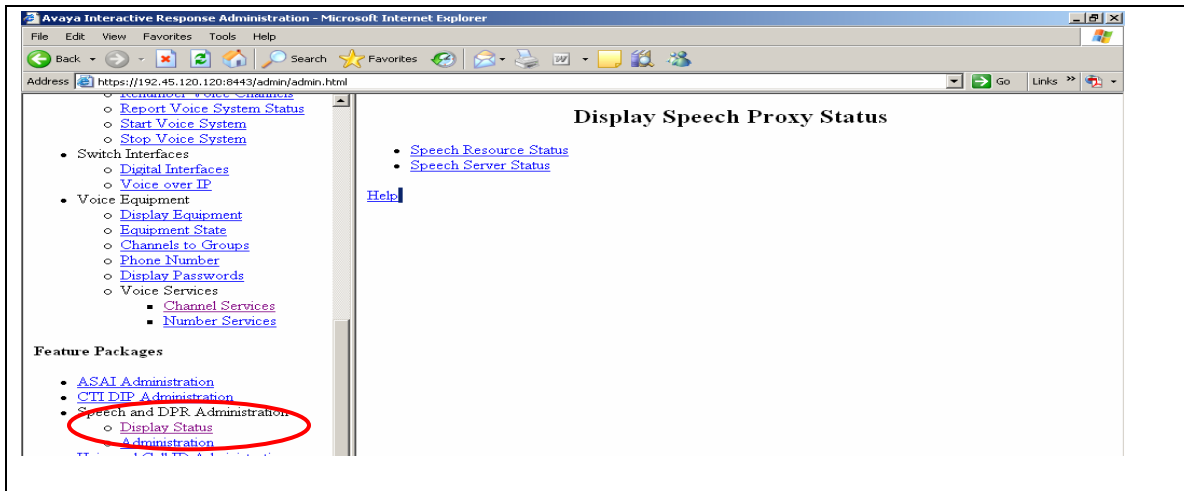
PORT  STATE  CHAN
-----
0     INSERU  N/A
1     INSERU  N/A

```

### 5.1.3. Using Web Administration

This feature is available only for checking the connection status to an ASR server.

**Step 1.** Open any web browser and login to the web administration screen by typing ‘http:\[<IP address of Avaya Interactive Response server>](http://<IP address of Avaya Interactive Response server>)’. Click the **Display Status** link under **Speech and DPR Administration** to view the **Display Speech Proxy Status** page as shown below. The **Speech Resource Status** link displays number of active ports and the **Speech Server Status** link displays the connectivity to the specified speech server.



## 5.2. Using the Avaya 'vxmlFeatureTest.vxml' Application

The *vxmlFeatureTest.vxml* application is automatically installed while installing the **AVvoicxml2-0** package.

This application is VXML 2.0 compliant and will not work with the earlier **AVvoicxml** Package. The **AVvoicxml2-0** package can be located on the Avaya Interactive Response server under the **optional\_features** folder in the **/export** directory. For details on installing an Avaya Interactive Response package, refer to Section 3.1.1.

Follow the steps below to locate and assign the *vxmlFeatureTest.vxml* to an Avaya Interactive Response channel.

**Step 1.** Use the telnet program to access the Avaya Interactive Response system by typing in the command line 'telnet <IP address of the Avaya Interactive Response server>'. Enter the login and password.

**Step 2.** Once logged in, change to the following directory by typing. 'cd /vs/data/vxml'. At the command prompt, type 'ls' and ensure that the *vxmlFeatureTest.vxml* application exists at this directory location.

**Step 3.** Close or minimize the Telnet window and log in to Avaya Interactive Response server through a web browser by typing 'http://<IP address of Avaya Interactive Response server>'. Enter the root login and password.

**Step 4.** Click on the **Channel Services** link under **Voice Services**. Select the desired channel(s) under the **Channel Services** table by clicking on the checkboxes alongside the channels under the **Select** column. Click the **Assign Selected** button to assign an application to these channels.

The screenshot shows the Avaya Interactive Response Administration web interface in Microsoft Internet Explorer. The address bar displays <https://192.45.120.120:8443/admin/admin.html>. The left sidebar contains a navigation menu with the following items:

- Feature Licensing
- JDBC Administration
- Message Administration
- System Control
  - ReNUMBER Voice Channels
  - Report Voice System Status
  - Start Voice System
  - Stop Voice System
- Switch Interfaces
  - Digital Interfaces
  - Voice over IP
- Voice Equipment
  - Display Equipment
  - Equipment State
  - Channels to Groups
  - Phone Number
  - Display Passwords
  - Voice Services
    - Channel Services
    - Number Services

The main content area is titled **Channel Services** and contains a table with the following columns: **Select**, **Chan**, **Service/URI**, **Type**, **Startup Service/URI**, and **Type**. The table lists 10 channels, all of which are currently unassigned.

Select	Chan	Service/URI	Type	Startup Service/URI	Type
<input checked="" type="checkbox"/>	0	-	unassigned	-	unassign
<input type="checkbox"/>	1	-	unassigned	-	unassign
<input type="checkbox"/>	2	-	VXML	-	unassign
<input type="checkbox"/>	3	-	VXML	-	unassign
<input type="checkbox"/>	4	-	unassigned	-	unassign
<input type="checkbox"/>	5	-	unassigned	-	unassign
<input type="checkbox"/>	6	-	unassigned	-	unassign
<input type="checkbox"/>	7	-	unassigned	-	unassign
<input type="checkbox"/>	8	-	unassigned	-	unassign
<input type="checkbox"/>	9	-	unassigned	-	unassign

Below the table, there are controls for navigating between pages of results: **< Prev**, **Channel Range: (0-9)**, **Next >**, and **Display 10 channels**. At the bottom of the table area, there are four buttons: **Unselect All**, **Assign Selected**, **Unassign Selected**, and **Refre**.

**Step 5.** Select **VXML URI** as the value for the **Assign** field as shown below. Click the **Submit** button to proceed.

The screenshot shows the Avaya Interactive Response Administration web interface in Microsoft Internet Explorer. The address bar displays <https://192.45.120.120:8443/admin/admin.html>. The left sidebar contains the same navigation menu as in the previous screenshot. The main content area is titled **Assign Services to Channels** and contains the following form fields:

- Assign:** A dropdown menu with **TAS Service** selected.
- Service:** A dropdown menu with **TAS Service**, **VXML Service**, and **VXML URI** (highlighted).
- Startup Service:** A text input field containing **VXML URI**.
- To Chan(s):** A text input field containing **0**.

Below the form fields are three buttons: **Submit**, **Reset**, and **Cancel**. A **Help** link is also present at the bottom left of the form area.

**Step 6.** Enter the complete path to the *vxmlFeatureTest.vxml* application under the **URI** field shown below. Ensure that the selected channels are displayed in the **To Chan(s)** field. Click on the **Submit** button to apply the changes.

Avaya Interactive Response Administration - Microsoft Internet Explorer

Address: https://192.45.120.120:8443/admin/admin.html

- Feature Licensing
- JDBC Administration
- Message Administration
- System Control
  - Renumber Voice Channels
  - Report Voice System Status
  - Start Voice System
  - Stop Voice System
- Switch Interfaces
  - Digital Interfaces
  - Voice over IP
- Voice Equipment

### Assign Services to Channels

Assign: VXML URI

URI: ///vs/data/vxml/vxmlFeatureTest.vxml

To Chan(s): 0

[Help](#)

**Step 7.** The screen displayed below lists the channels and the complete path to the *vxmlFeatureTest.vxml* application.

Avaya Interactive Response Administration - Microsoft Internet Explorer

Address: https://192.45.120.120:8443/admin/admin.html

- Feature Licensing
- JDBC Administration
- Message Administration
- System Control
  - Renumber Voice Channels
  - Report Voice System Status
  - Start Voice System
  - Stop Voice System
- Switch Interfaces
  - Digital Interfaces
  - Voice over IP
- Voice Equipment
  - Display Equipment
  - Equipment State
  - Channels to Groups
  - Phone Number
  - Display Passwords
  - Voice Services
    - Channel Services
    - Number Services

### Channel Services

Select	Chan	Service/URI	Type	Startup Service/URI	Type
<input type="checkbox"/>	0	///vs/data/vxml/vxmlFeatureTest.vxml	VXML	-	unassigned
<input type="checkbox"/>	1	-	unassigned	-	unassigned
<input type="checkbox"/>	2	-	VXML	-	unassigned
<input type="checkbox"/>	3	-	VXML	-	unassigned
<input type="checkbox"/>	4	-	unassigned	-	unassigned
<input type="checkbox"/>	5	-	unassigned	-	unassigned
<input type="checkbox"/>	6	-	unassigned	-	unassigned
<input type="checkbox"/>	7	-	unassigned	-	unassigned
<input type="checkbox"/>	8	-	unassigned	-	unassigned
<input type="checkbox"/>	9	-	unassigned	-	unassigned

< Prev Channel Range: (0-9) Next > Display 10 channels.

[Help](#)

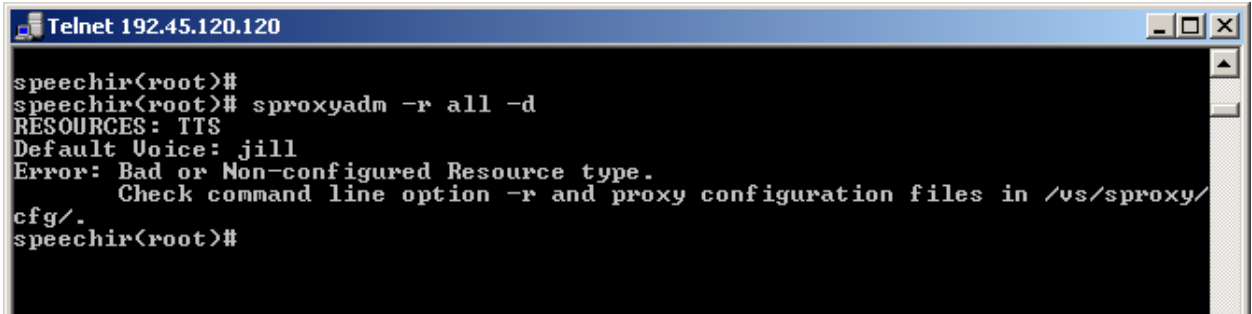
Feature Packages

- ASAT Administration

**Step 8.** Ensure that the voice system is running. Refer to Section 3.2 for starting the voice system. Place a call and verify that the welcome prompt is played.

## 6. Trouble Shooting

### 6.1. 'sproxyadm' Command does not show Configured Speech Recognition and TTS Ports

A screenshot of a Telnet window titled 'Telnet 192.45.120.120'. The window shows a command prompt 'speechir(root)#' where the command 'sproxyadm -r all -d' has been entered. The output of the command is displayed as follows: 'RESOURCES: TTS', 'Default Voice: jill', and an error message: 'Error: Bad or Non-configured Resource type. Check command line option -r and proxy configuration files in /vs/sproxy/cfg/'. The prompt 'speechir(root)#' is shown again at the bottom.

```
Telnet 192.45.120.120
speechir(root)#
speechir(root)# sproxyadm -r all -d
RESOURCES: TTS
Default Voice: jill
Error: Bad or Non-configured Resource type.
        Check command line option -r and proxy configuration files in /vs/sproxy/
cfg/.
speechir(root)#
```

**Figure 2: Output of 'sproxyadm' Command**

Stop and start the voice system detailed in Section 3.2 if the error message displayed in **Figure 2** is displayed and retry the command. If the error re-occurs then reinstall the ASR and/or TTS package.

Configure the packages through the Avaya Interactive Response web administration interface and run the 'sproxyadm' command. Refer to Section 3.1.1 for installing and uninstalling speech packages.

## 6.2. Creating IBM WVS Installation CDs from Images

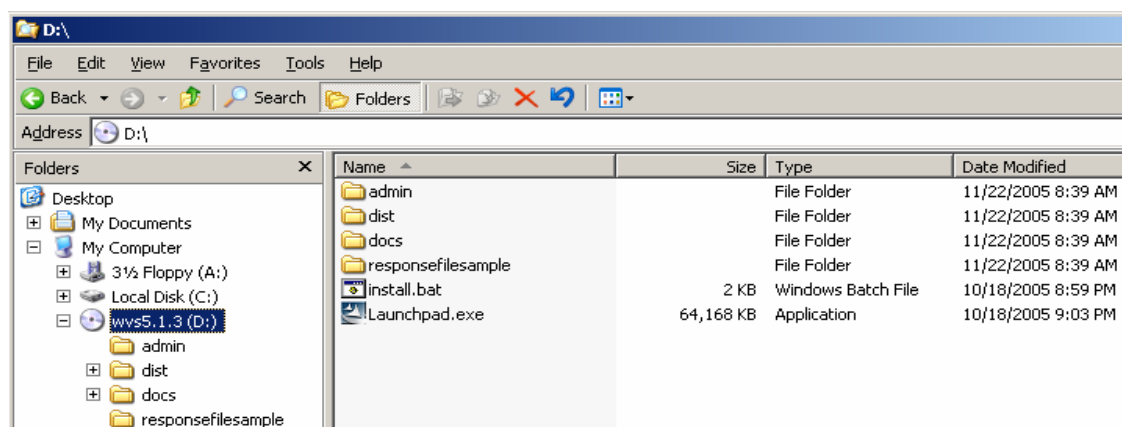
This section is provided as a reference for creating directory structure for burning IBM WVS CDs.

For each installation CD, the files should either be placed under the root directory of the CD drive or under a specified folder name in the root directory as shown below.

**Note:** Failure to create IBM WVS media CDs using the directory structure listed in the steps below will result in a failed installation.

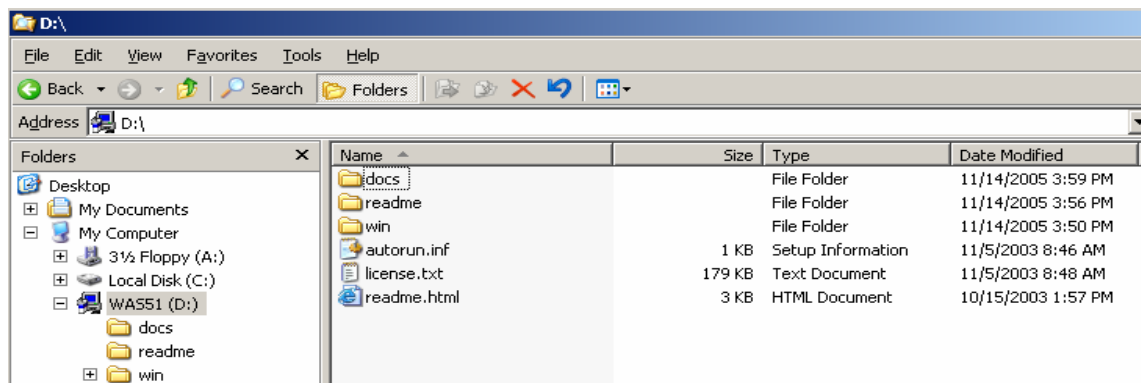
### Step 1. IBM WVS installation CD

All the installation files should be copied to the root directory of the CD drive as shown below before creating the CD.



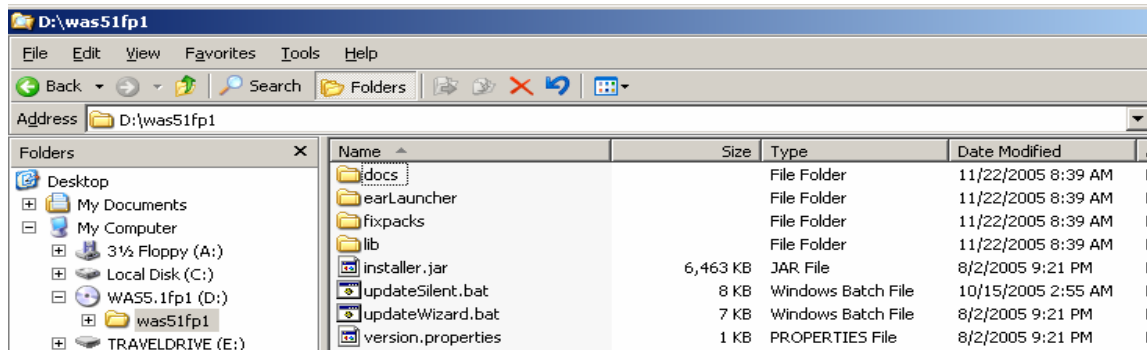
### Step 2. IBM WAS installation CD

All the installation files should be copied to the root directory of the CD drive as shown below before creating the CD.



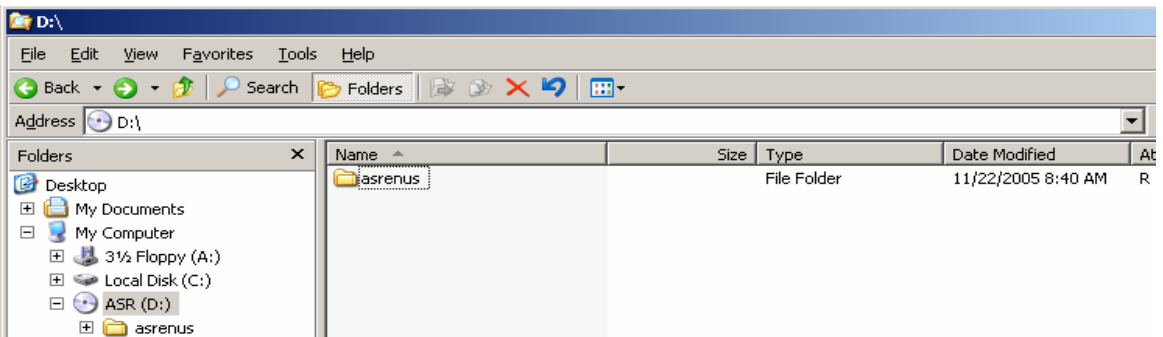
### Step 3. IBM WAS Fix Pack 1 installation CD

Create a folder named **was51fp1** under the root directory of the CD drive and copy the files into this folder as shown below.



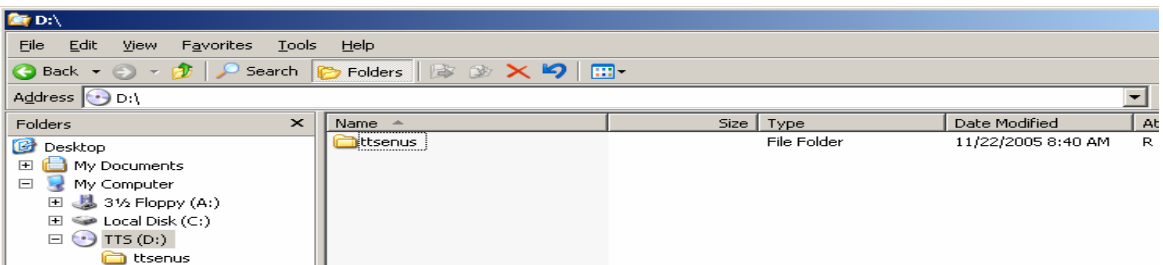
### Step 4. WVS ASR Installation CD

Create a folder named **asrenus** under the root directory of the CD drive and copy the files into this folder as shown below.



### Step 5. WVS TTS install CD

Create a folder named **ttsenus** under the root directory of the CD drive and copy the files into this folder as shown below.



## 7. Conclusion

These Application Notes describe a sample configuration for installing, configuring and testing IBM WVS 5.1.3 Advanced Speech Recognition (ASR) and Text-to-Speech (TTS) engines on the Avaya Interactive Response system. The setup uses IBM WVS ASR and TTS components to add speech recognition and Text-to-Speech functionality for self service applications deployed on the Avaya Interactive Response platform.

## 8. References

The following references can be found at the Avaya support site,  
<http://support.avaya.com>

[1] Avaya Interactive Response (IR) Release 1.3 System Help Issue 1.0 February 2005

[2] Avaya Interactive Response Release 1.3 Installation, Migration and Troubleshooting Guide Material ID 700357122 February 2005



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