



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

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# **Application Notes for Anhui USTC iFLYTEK InterPhonic and iFLYTEK InterReco with Avaya Interactive Response using iFLYTEK MRCP Server – Issue 1.0**

## **Abstract**

These Application Notes describe the configuration steps required to integrate Anhui USTC iFLYTEK InterPhonic and InterReco with Avaya Interactive Response using iFLYTEK MRCP Server. iFLYTEK uses the Media Resource Control Protocol (MRCP) version 2 for its Text-To-Speech (TTS) and Automatic Speech Recognition (ASR) features to interface with VoiceXML applications running on the Avaya Interactive Response.

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

# 1. Introduction

These Application Notes describe the configuration steps required to integrate Anhui USTC iFLYTEK InterPhonic and InterReco with Avaya Interactive Response (IR) using iFLYTEK MRCP Server. iFLYTEK uses the Media Resource Control Protocol (MRCP) version 2 for its Text-To-Speech (TTS) and Automatic Speech Recognition (ASR) features to interface with VoiceXML (VXML) applications running on Avaya Interactive Response.

iFLYTEK InterPhonic is an industry-leading Text-To-Speech (TTS) software product capable of automatically converting any text into continuous natural voice in real-time.

InterReco, the speech recognition solution from iFLYTEK, is the essential choice for constructing an efficient, stable, convenient speech service to enhance the service quality and satisfy service requirement.

iFLYTEK MRCP Server is a product based on the MRCP version 2 protocol. It provides rapid integration to self service platforms such as the Avaya Interactive Response, in addition to providing convenient upgrade and expansion, high performance, high quality load balance, simple arrangement and maintenance.

## 1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to Avaya Interactive Response that ran VoiceXML applications that use the ASR and TTS engines on the iFLYTEK speech solution. The compliance test focused on placing calls to verify TTS synthesis and speech recognition.

The serviceability testing focused on verifying the ability of the iFLYTEK speech solution to recover from adverse conditions, such as power failures and disconnecting cables to the IP network.

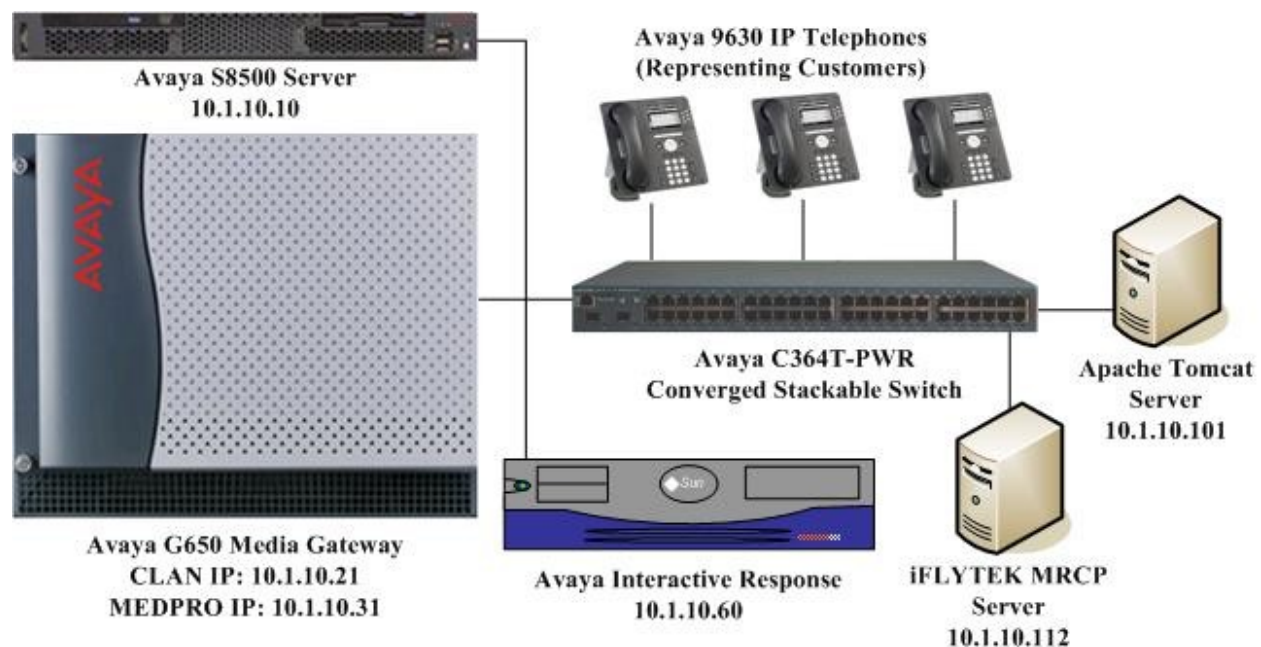
## 1.2. Support

For technical support on iFLYTEK speech solutions, contact the iFLYTEK support team at:

- Phone: +86-551-5331813
- Email: [tts\\_support@iFLYtek.com](mailto:tts_support@iFLYtek.com)

## 2. Reference Configuration

**Figure 1** illustrates the test configuration used to verify the iFLYTEK solution. The iFLYTEK MRCP Server, iFLYTEK InterPhonic and iFLYTEK InterReco were installed on a Microsoft Windows 2003 Server with Service Pack 2. VoiceXML scripts and VoiceXML applications developed using Avaya Dialog Designer were installed on a second Microsoft Windows 2003 Server running Microsoft Internet Information Services (IIS) and Apache Tomcat and accessed by Avaya Interactive Response. Avaya Interactive Response interfaced with Avaya Communication Manager running on the S8500 Server and G650 Media Gateway using the Voice over IP (VoIP) feature on Avaya Interactive Response. With VoIP, transmission to Avaya Communication Manager is achieved without digital interfaces (T1/E1). Instead, all transmissions occur over the IP network using the network interface card (NIC) on the Avaya Interactive Response system. Avaya IP telephones were used to place calls to Avaya Interactive Response, which would run the VoiceXML scripts and applications. The applications would use the iFLYTEK MRCP Server for speech synthesis and speech recognition.



**Figure 1: Test Configuration**

### 3. Equipment and Software Validated

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

Equipment	Software
Avaya Interactive Response	4.0 with Service Pack 1
Avaya S8500 Server	Avaya Communication Manager 5.1.2 (R015x.01.2.416.4) with Service Pack (01.2.416.4-17067)
Avaya G650 Media Gateway <ul style="list-style-type: none"><li>TN2312BP IP Server Interface</li><li>TN799DP C-LAN Interface</li><li>TN2302AP IP Media Processor</li></ul>	- HW07, FW044 HW01, FW031 HW20, FW118
Avaya 9630 IP Telephones	3.0 (H.323)
Avaya C364T-PWR Converged Stackable Switches	4.5.18
Apache Tomcat	5.5.25
Microsoft Windows Server 2003 Standard Edition	Service Pack 2
iFLYTEK InterPhonic	6.0.0.5900
iFLYTEK InterReco	2.5
iFLYTEK MRCP Server	3.5.0.36

### 4. Configure Avaya Communication Manager

This section presents the configuration required on Avaya Communication Manager to interface with Avaya IR. The configuration is performed via the System Access Terminal (SAT) on Avaya Communication Manager.

Step	Description
1.	Use the <b>display system-parameters customer-options</b> command to check that Avaya Communication Manager has the feature license enabled for Avaya IR connectivity. On page 10, verify that the Limit field for <b>IP_API_A</b> has a value greater than or equal to the number of channels configured on Avaya IR in <b>Section 5 Step 6</b> . In this configuration, thirty IR channels were configured for testing.

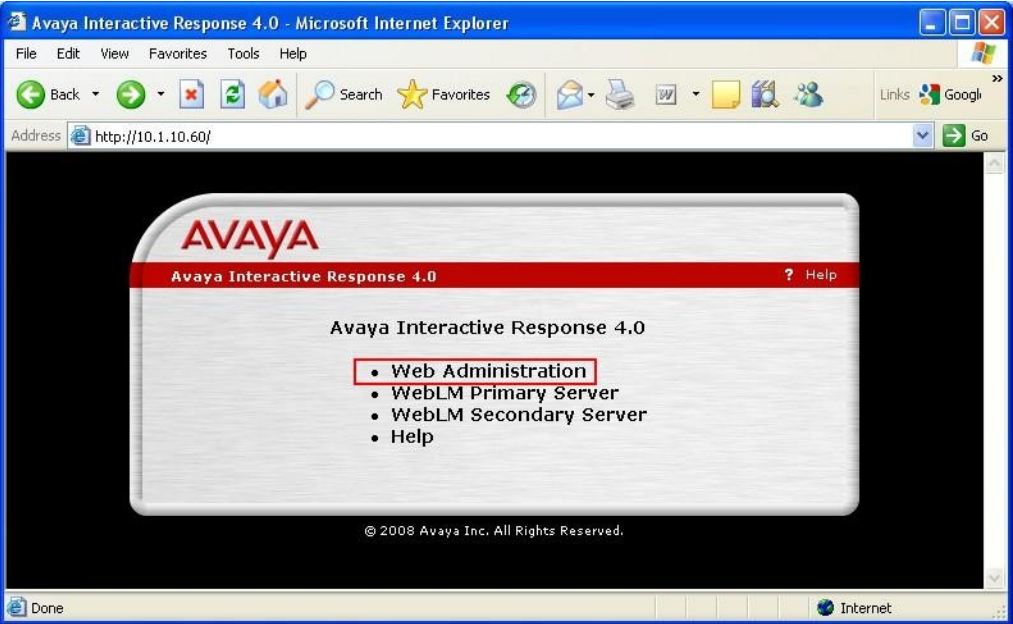
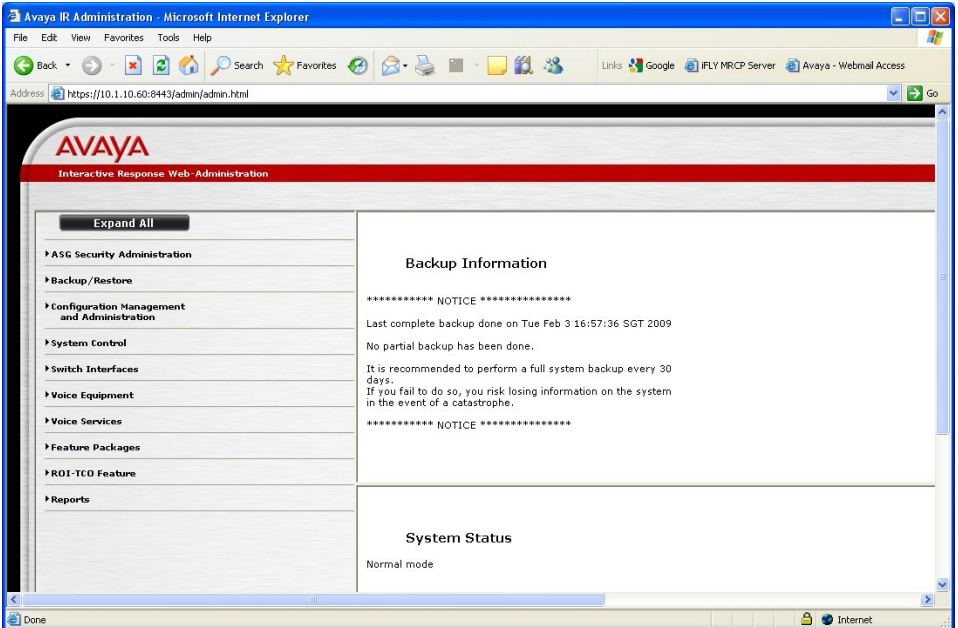
Step	Description
	<pre>display system-parameters customer-options</pre> <p style="text-align: right;">Page 10 of 11</p> <pre> MAXIMUM IP REGISTRATIONS BY PRODUCT ID  Product ID  Rel. Limit      Used IP_API_A    : 1000        30 IP_API_B    : 0           0 IP_API_C    : 0           0 IP_Agent    : 100         0 IP_IR_A     : 0           0 IP_Phone    : 18000       2 IP_ROMax    : 18000       0 IP_Soft     : 100         0 IP_eCons    : 5           0 oneX_Comm   : 18000       0               : 0         0 </pre>
2.	<p>Enter the <b>change system-parameters features</b> command. On page 6, set the <b>7434ND</b> field to <b>y</b>.</p> <pre> change system-parameters features FEATURE-RELATED SYSTEM PARAMETERS Public Network Trunks on Conference Call: 5      Auto Start? y Conference Parties with Public Network Trunks: 6  Auto Hold? n Conference Parties without Public Network Trunks: 6 Attendant Tone? y Night Service Disconnect Timer (seconds): 180    Bridging Tone? n Short Interdigit Timer (seconds): 3              Conference Tone? n Unanswered DID Call Timer (seconds):             Intrusion Tone? n Line Intercept Tone Timer (seconds): 30          Mode Code Interface? n Long Hold Recall Timer (seconds): 0 Reset Shift Timer (seconds): 0 Station Call Transfer Recall Timer (seconds): 0   Recall from VDN? n DID Busy Treatment: tone  Allow AAR/ARS Access from DID/DIOD? n Allow ANI Restriction on AAR/ARS? n Use Trunk COR for Outgoing Trunk Disconnect? n 7405ND Numeric Terminal Display? n              7434ND? y DISTINCTIVE AUDIBLE ALERTING Internal: 1 External: 2 Priority: 3 Attendant Originated Calls: external DTMF Tone Feedback Signal to VRU - Connection:   Disconnection: </pre>
3.	<p>Enter the <b>add station n</b> command where <b>n</b> is a valid extension, to configure the IR channel as a station with the <b>Type</b> field set to <b>7434ND</b>. Specify the <b>Security Code</b>, which will be used in <b>Section 5 Step 19</b> when configuring the phone numbers on IR. Set <b>Port</b> to <b>X</b>, <b>Display Module</b> to <b>y</b> and <b>IP Softphone</b> to <b>y</b>.</p> <p>Repeat for each IR channel. In this configuration, thirty IR channels were configured with an extension range of 10101 to 10130.</p>

Step	Description
	<div> add station 10101 <div>Page 1 of 6</div> </div> <div> <div>STATION</div> <div> <div>Extension: 10101</div> <div> <div>Type: 7434ND</div> <div>Port: X</div> <div>Name: IR #1</div> </div> <div> <div>Lock Messages? n</div> <div>Security Code: 12345</div> <div>Coverage Path 1:</div> <div>Coverage Path 2:</div> <div>Hunt-to Station:</div> </div> <div> <div>BCC: 0</div> <div>TN: 1</div> <div>COR: 1</div> <div>COS: 1</div> </div> </div> </div> <div> <div>STATION OPTIONS</div> <div> <div>Loss Group: 2</div> <div>Data Module? n</div> <div>Display Module? y</div> <div>Display Language: english</div> <div>Survivable COR: internal</div> <div>Survivable Trunk Dest? y</div> </div> <div> <div>Time of Day Lock Table:</div> <div>Personalized Ringing Pattern: 1</div> <div>Message Lamp Ext: 10101</div> <div>Coverage Module? n</div> <div>Media Complex Ext:</div> <div>IP SoftPhone? y</div> <div>Remote Office Phone? n</div> <div>IP Video Softphone? n</div> </div> </div>

## 5. Configure Avaya Interactive Response

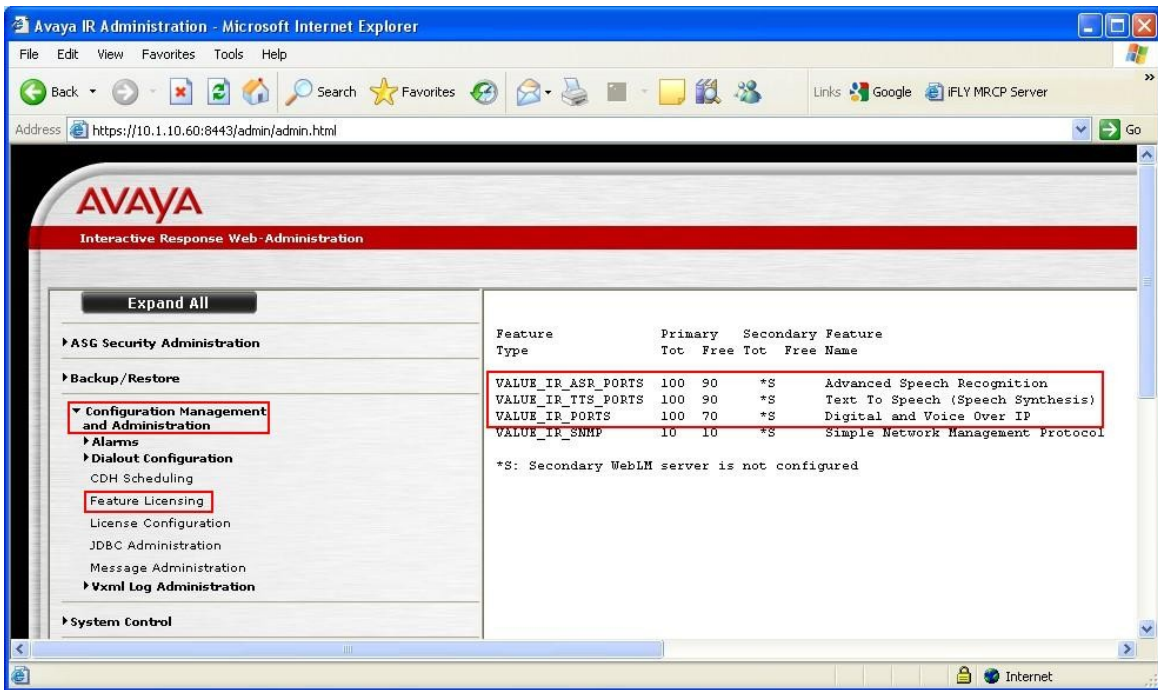
This section covers the configuration of Avaya Interactive Response. Avaya Communication Manager routes incoming calls to Avaya IR using Voice over IP (VoIP) over the data network. Each VoIP channel was assigned a phone number that matched a corresponding extension configured on Avaya Communication Manager in **Section 4 Step 3**. VXML scripts and VXML applications developed using Avaya Dialog Designer was deployed to an Apache Tomcat server. Avaya IR was then configured to access the VXML applications.

Step	Description
1.	<p>The following packages need to be installed on Avaya IR to support the VoIP feature, MRCP version 2 Text-to-Speech and MRCP version 2 Automatic Speech Recognition.</p> <ul style="list-style-type: none"> <li>• Voice Over IP (AVvoip)</li> <li>• Speech Proxy Base Software (AVsproxy)</li> <li>• Proxy Text-to-Speech Package (AVttsprxy)</li> <li>• MRCP TTS Proxy (AVmrcptts)</li> <li>• Speech Proxy SR - Speech Recognition (AVsrproxy)</li> <li>• MRCPv2 ASR Proxy (AVmrcpv2asr)</li> </ul> <p>Enter the command <b>pkginfo -c IVR</b> command from the Avaya IR command line to verify the required packages are installed.</p> <pre> irl(root)# pkginfo -c IVR IVR          AVbackrst          Backup/Restore Utilities IVR          AVftst             Feature Test Script Package IVR          AVir              Interactive Response Base System IVR          AVjdbcint         JDBC Integration IVR          AVlm             License Manager IVR          <b>AVmrcpv2asr</b>         <b>MRCPv2 ASR Proxy</b> IVR          <b>AVmrcpv2tts</b>       <b>MRCPv2 TTS Proxy</b> IVR          AVsc             Service Creation Integration Packag e Release 6.1 IVR          <b>AVsproxy</b>         <b>Speech Proxy Base Software</b> IVR          <b>AVsrproxy</b>       <b>Speech Proxy SR - Speech Recognitio n</b> IVR          AVtsm             Transaction State Machine IVR          <b>AVttsprxy</b>       <b>Proxy Text-to-Speech Package</b> IVR          AVucid           Universal Call ID IVR          AVval            Avaya IR System Validation Package IVR          AVvoicxml2-0     Voice XML Interpreter IVR          <b>AVvoip</b>         <b>Voice Over IP</b> IVR          AVwebadm         Web Administration IVR          AVxfer           Call Transfer and Bridge Package IVR          ebsUS            Enhanced Basic Speech - US_English - Female IVR          ebsUSM           Enhanced Basic Speech - US_English - Male IVR          ir40sp1          Service Pack 1 for Interactive Resp onse 4.0 base system irl(root)# </pre>

Step	Description
2.	<p>The Avaya IR configuration was performed via a web browser. Enter the IP address of Avaya IR in the URL field of the web browser. The initial Avaya IR webpage is displayed as shown. Click <b>Web Administration</b> to display the log in screen (not shown), and log into Avaya IR with the appropriate credentials.</p> 
3.	<p>After logging into Avaya IR, the main Avaya IR configuration webpage is displayed.</p> 



Step	Description
4.	<p>To verify that Avaya IR has the appropriate licenses to run the TTS and ASR applications, click <b>Configuration Management and Administration &gt; Feature Licensing</b> to display the Feature License page. Verify that the <b>Free</b> field for the Feature Type <b>VALUE_IR_PORTS</b> has a value equal or greater than the number of VoIP channels needed and <b>VALUE_IR_TTS_PORTS</b> and <b>VALUE_IR_ASR_PORTS</b> have values equal or greater than the number of TTS and ASR sessions needed respectively. Otherwise, contact the Avaya sales channel to obtain the required licenses.</p>

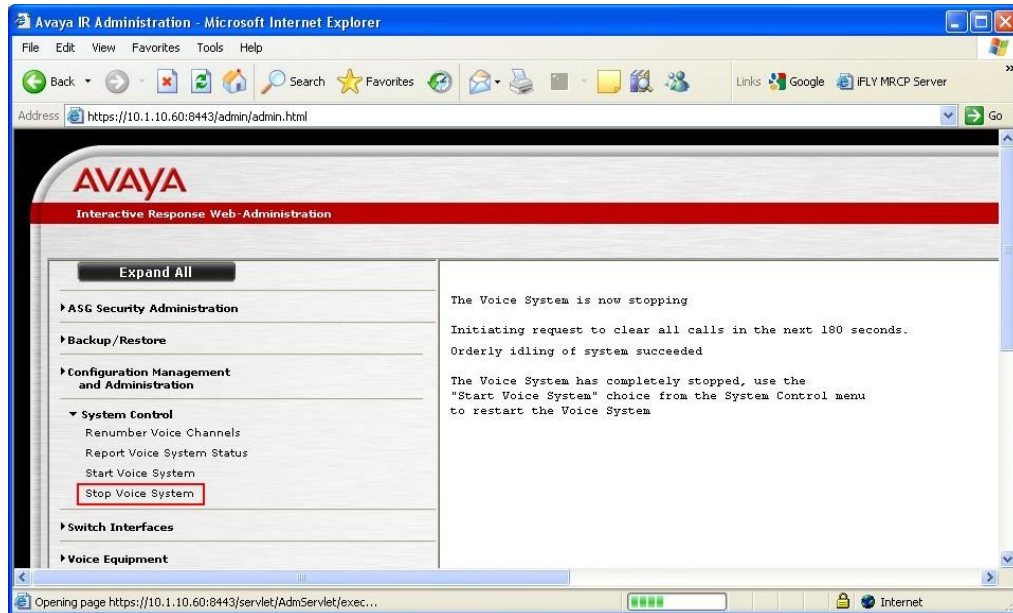


The screenshot shows the Avaya IR Administration web interface in a Microsoft Internet Explorer browser window. The address bar shows the URL https://10.1.10.60:8443/admin/admin.html. The page title is "Avaya IR Administration - Microsoft Internet Explorer". The main content area displays the "AVAYA Interactive Response Web-Administration" interface. On the left, there is a navigation menu with the following items: "Expand All", "ASG Security Administration", "Backup/Restore", "Configuration Management and Administration" (highlighted with a red box), "Alarms", "Dialogout Configuration", "CDH Scheduling", "Feature Licensing" (highlighted with a red box), "License Configuration", "JDBC Administration", "Message Administration", "Vxml Log Administration", and "System Control". The main content area displays a table of feature licenses. The table has the following columns: "Feature Type", "Primary Tot", "Primary Free", "Secondary Tot", "Secondary Free", and "Feature Name". The table contains the following data:

Feature Type	Primary Tot	Primary Free	Secondary Tot	Secondary Free	Feature Name
VALUE_IR_ASR_PORTS	100	90	*S		Advanced Speech Recognition
VALUE_IR_TTS_PORTS	100	90	*S		Text To Speech (Speech Synthesis)
VALUE_IR_PORTS	100	70	*S		Digital and Voice Over IP
VALUE_IR_SNMP	10	10	*S		Simple Network Management Protocol

\*S: Secondary WebLM server is not configured

Step	Description
5.	<p>Click <b>System Control &gt; Stop Voice System</b> to stop the Voice System so that the VoIP interface can be configured. When the Stop Voice System page is displayed (not shown), click <b>Submit</b> and wait until the system displays a message indicating that the Voice System has completely stopped.</p>



Step	Description
6.	<p>To configure the VoIP interface, follow these steps:</p> <ol style="list-style-type: none"> <li>Click <b>Switch Interfaces &gt; Voice over IP</b> to display the Voice over IP page (not shown).</li> <li>Click <b>Assign Card</b> and then click <b>Submit</b> to display the Assign VoIP Card page.</li> <li>Set <b>Card IP Address</b> to the IP address of the NIC card on Avaya IR used for VoIP and <b>Gatekeeper IP Address</b> to the IP address of the CLAN board.</li> <li>Set <b>No of Ports</b> to the number of IR channels created in <b>Section 4 Step 3</b>.</li> <li>Set <b>Media Encryption</b> to <b>Disabled</b> to match the IP Codec Set configured in <b>Section 4 Step 4</b>.</li> <li>Click <b>Submit</b>.</li> </ol>

The screenshot shows the 'Avaya IR Administration - Microsoft Internet Explorer' window. The address bar displays 'https://10.1.10.60:8443/admin/admin.html'. The page title is 'Interactive Response Web Administration'. The left sidebar contains a tree view with the following expanded sections:

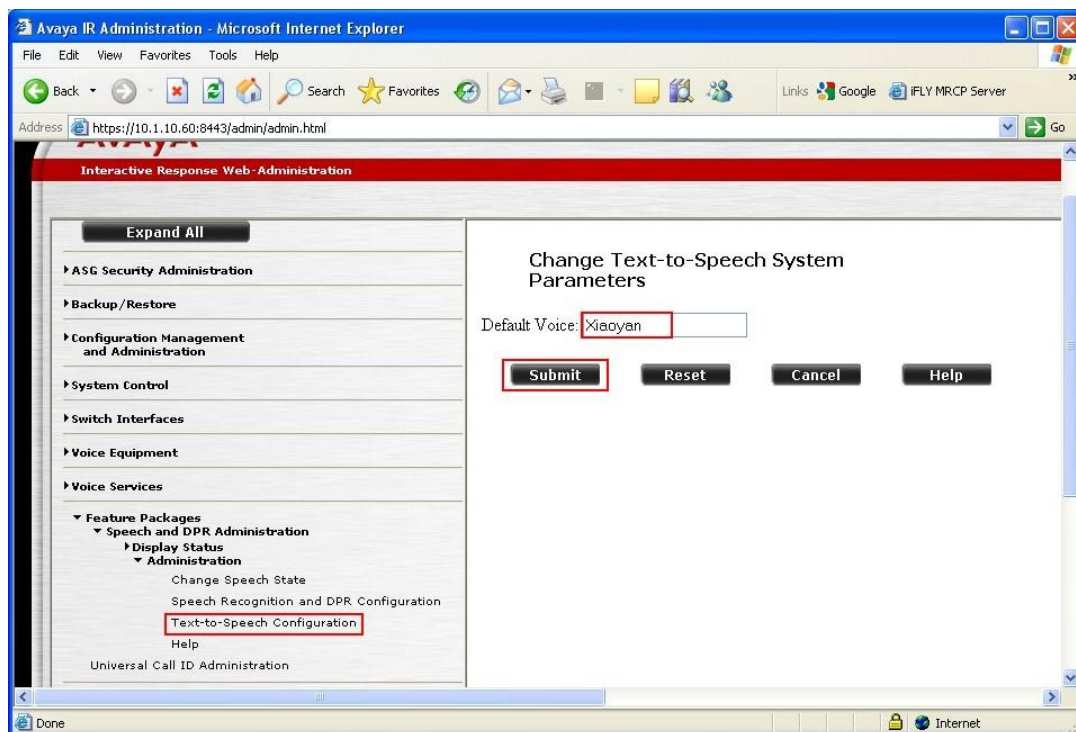
- ASG Security Administration
- Backup/Restore
- Configuration Management and Administration
- System Control
  - Switch Interfaces
    - Voice over IP
      - Display Assignments
      - Assign Card
      - Change Parameters
      - Display Parameters
      - Unassign Card
      - Help
  - Voice Equipment
  - Voice Services
  - Feature Packages
  - ROI-TCO Feature
  - Reports

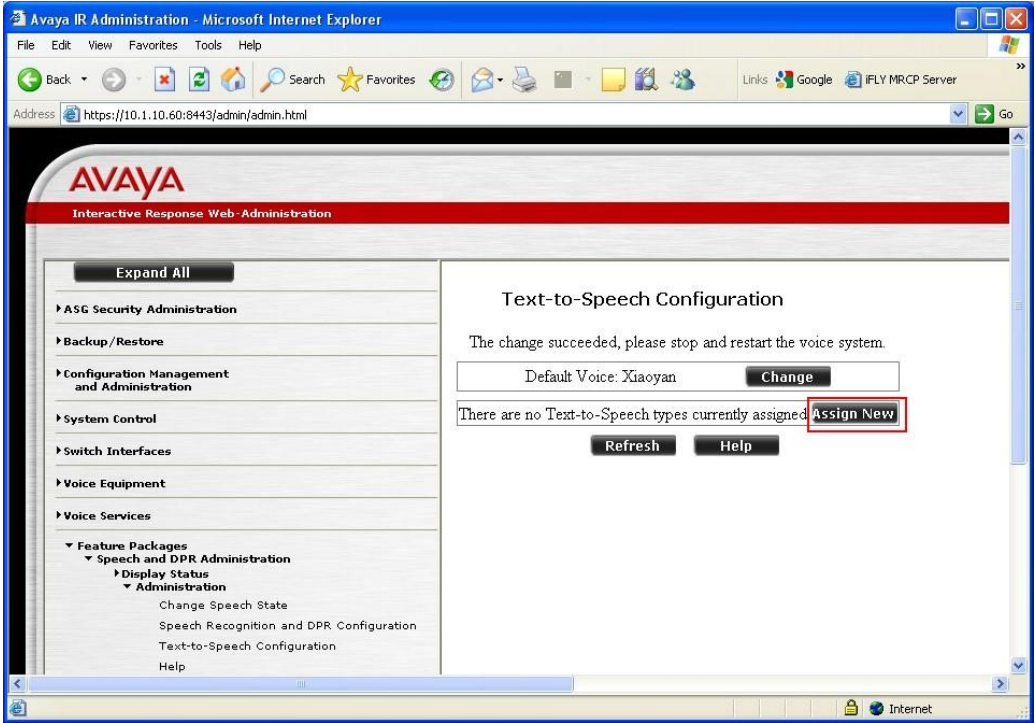
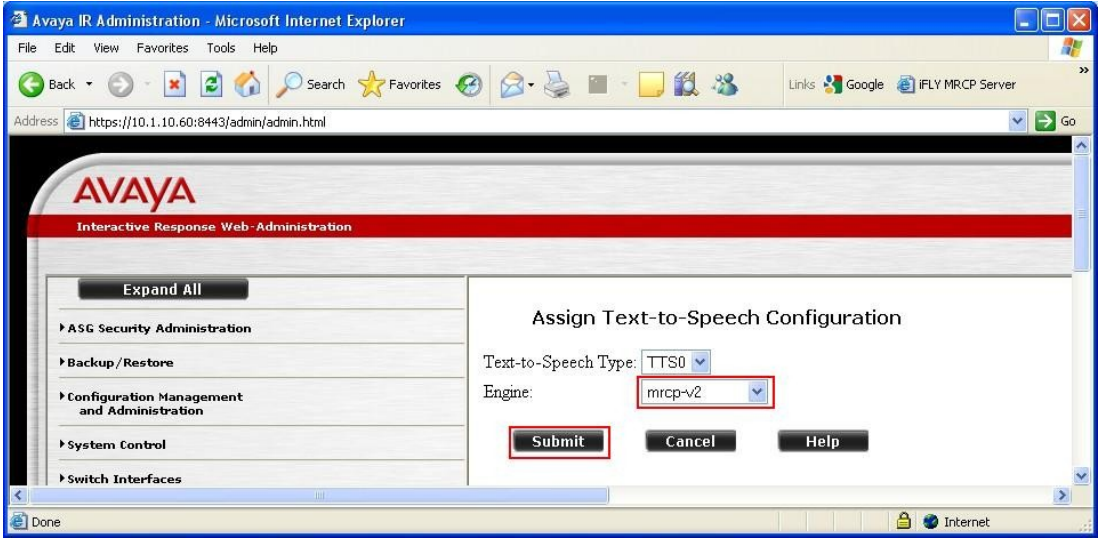
The main content area is titled 'Assign VoIP Card: 6' and contains the following fields and buttons:

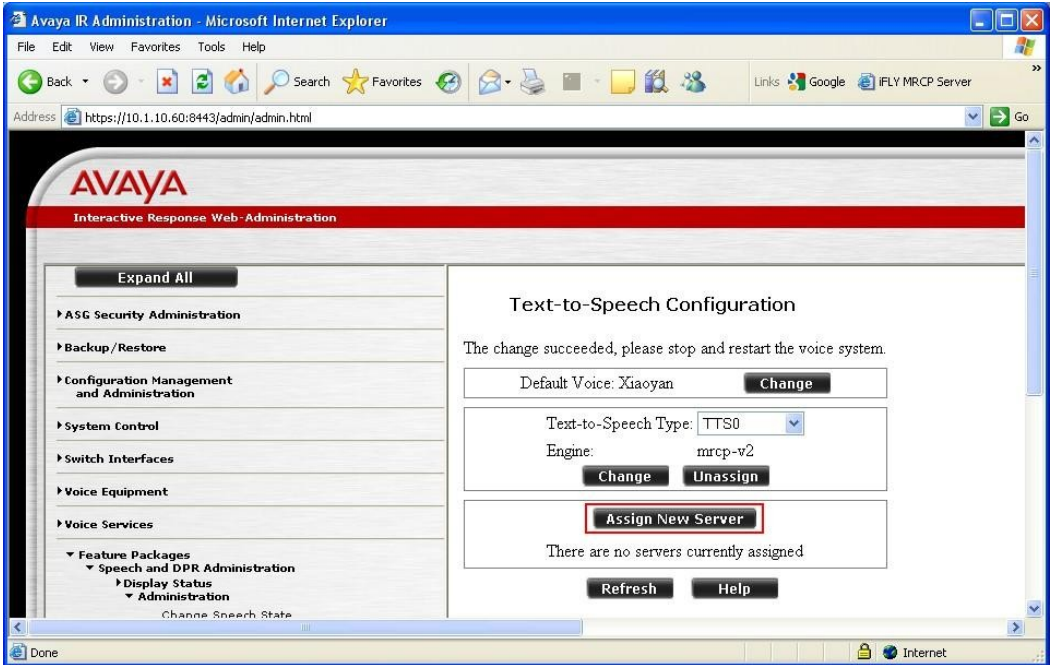
- Card Name: VH323
- Card Enabled?: yes
- Card IP Address: 10.1.10.60
- Gatekeeper IP Address: 10.1.10.21
- H.323 Gatekeeper Port: 1719
- Backup Gatekeeper IP: 127.0.0.0
- Low RTP Port: 8000
- High RTP Port: 10000
- RTP Packet Size: 50
- RTCP Monitor Enabled?: no
- RTCP Monitor IP Address: 127.0.0.0
- RTCP Monitor Port: 5005
- Avaya CM Name: CM6
- No of Ports: 30
- Media Encryption: Disabled

At the bottom of the form are four buttons: Submit, Reset, Cancel, and Help.

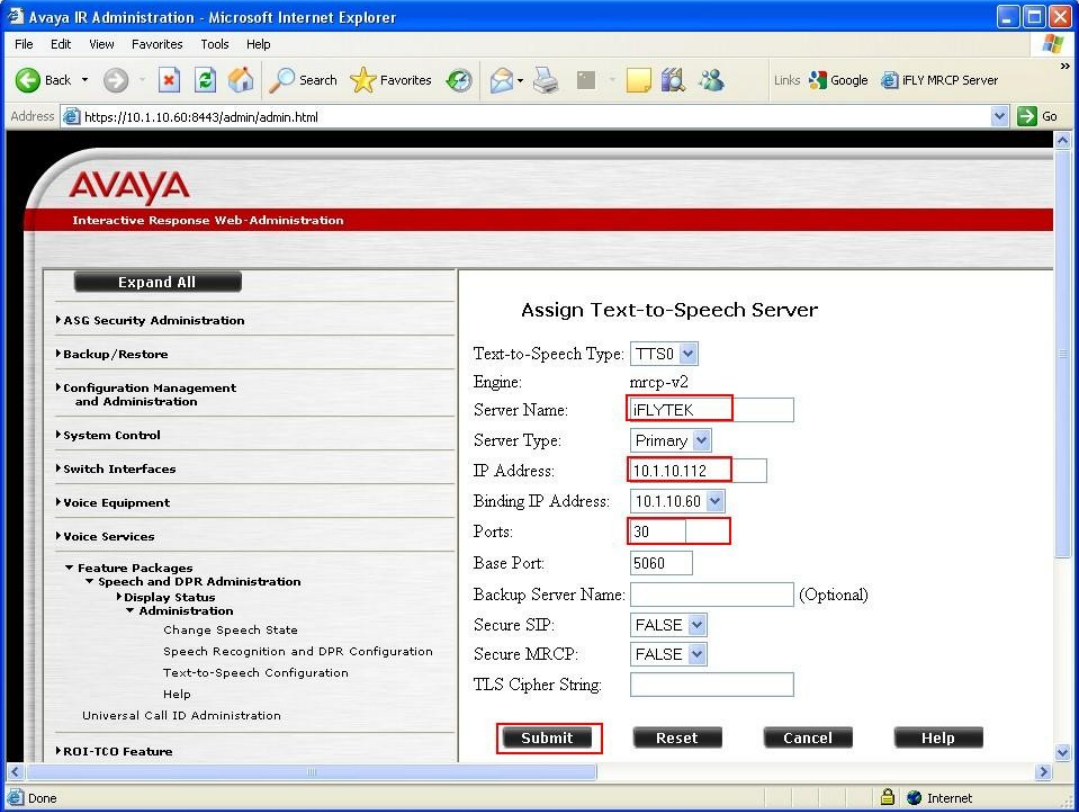
Step	Description
7.	<p>To Configure Text-to-Speech in Avaya IR, click <b>Feature Packages &gt; Speech and DPR Administration &gt; Administration &gt; Text-to-Speech Configuration</b> in the left pane. Set the <b>Default Voice</b> to <b>Xiaoyan</b> and click <b>Submit</b>.</p>

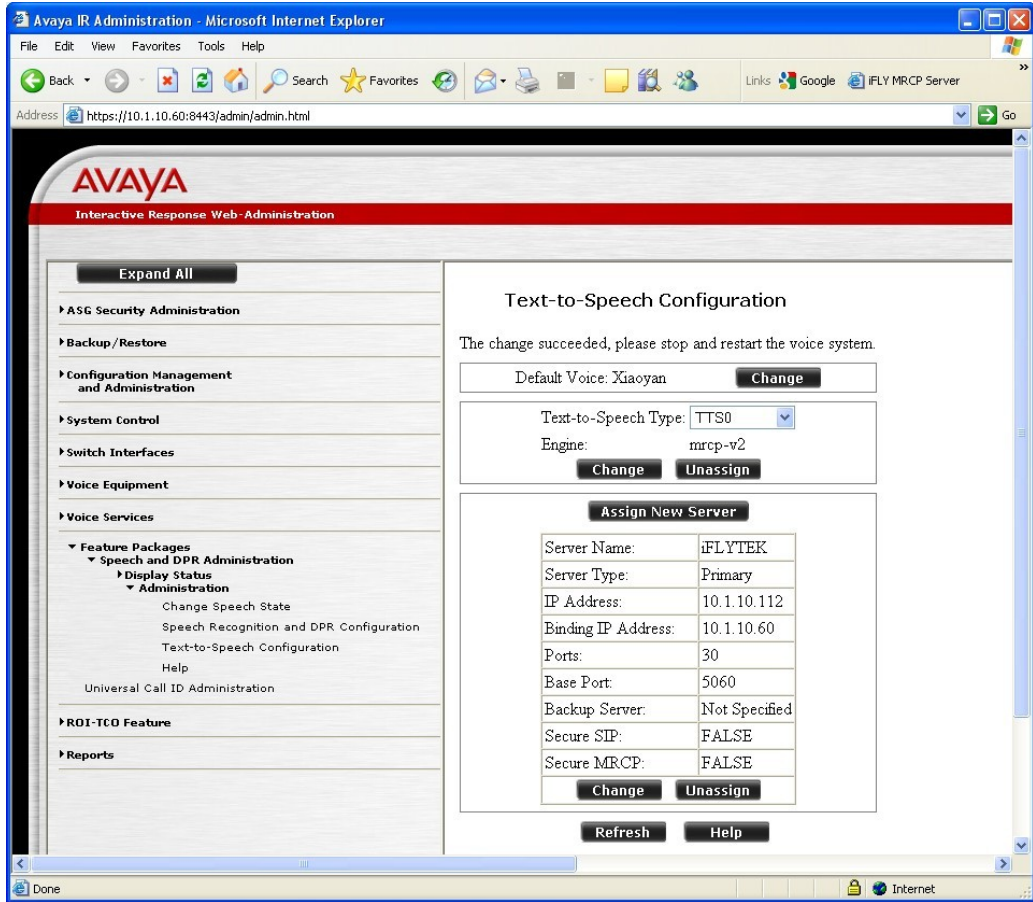


Step	Description
8.	<p>In the Text-to-Speech Configuration page, click <b>Assign New</b>.</p> 
9.	<p>The Assign Text-to-Speech Configuration page is displayed. Set the <b>Engine</b> field to <b>mrctp-v2</b> and click <b>Submit</b>.</p> 

Step	Description
10.	<p>In the Text-to-Speech Configuration page, click <b>Assign New Server</b>.</p>  <p>The screenshot shows a Microsoft Internet Explorer window titled 'Avaya IR Administration - Microsoft Internet Explorer'. The address bar shows 'https://10.1.10.60:8443/admin/admin.html'. The page features the Avaya logo and 'Interactive Response Web-Administration'. On the left is a navigation menu with categories like 'ASG Security Administration', 'Backup/Restore', 'Configuration Management and Administration', 'System Control', 'Switch Interfaces', 'Voice Equipment', 'Voice Services', and 'Feature Packages'. The 'Text-to-Speech Configuration' section on the right displays a success message: 'The change succeeded, please stop and restart the voice system.' Below this, it shows 'Default Voice: Xiaoyan' with a 'Change' button. Further down, 'Text-to-Speech Type' is set to 'TTS0' and 'Engine' is 'mrccp-v2', both with 'Change' and 'Unassign' buttons. The 'Assign New Server' button is highlighted with a red rectangle. At the bottom of this section, it states 'There are no servers currently assigned' with 'Refresh' and 'Help' buttons.</p>

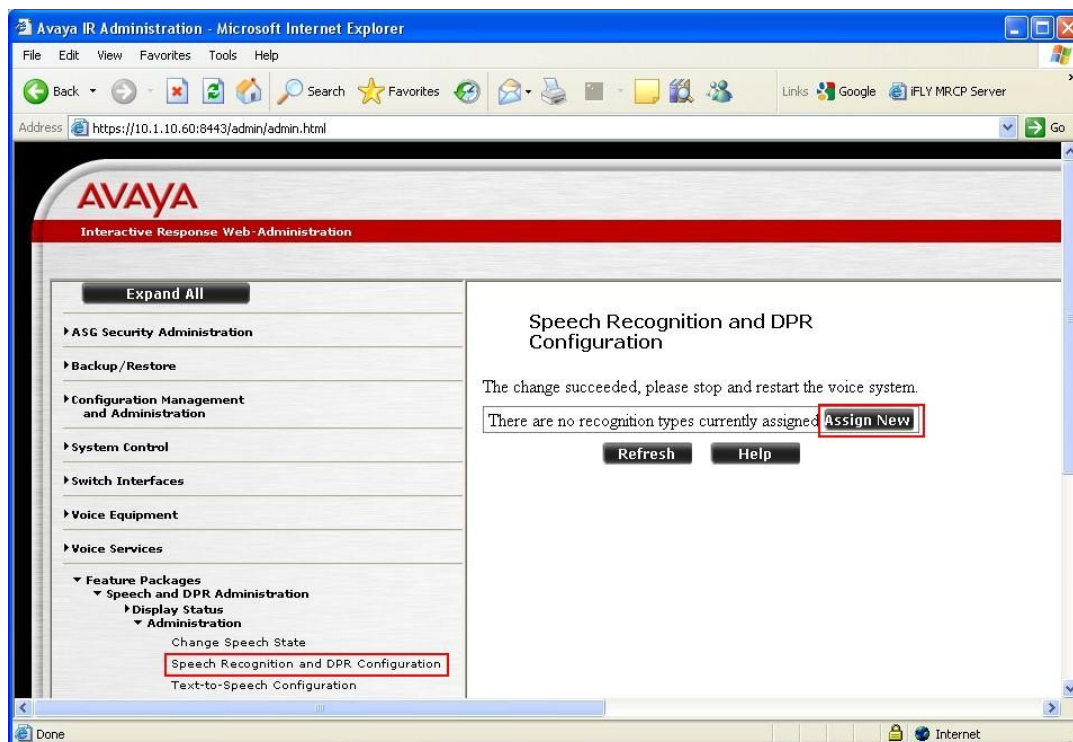


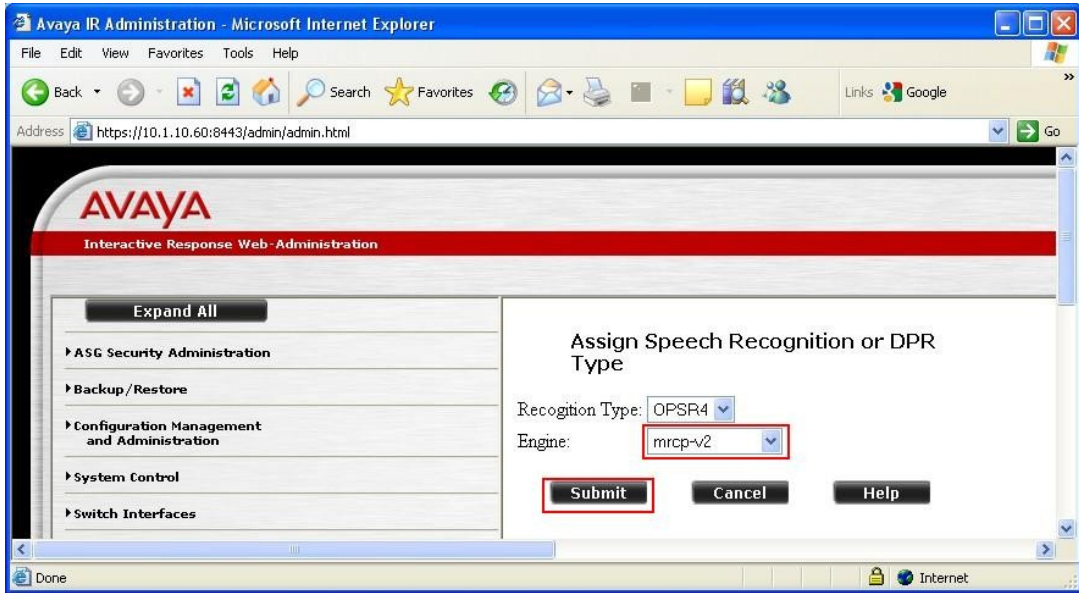
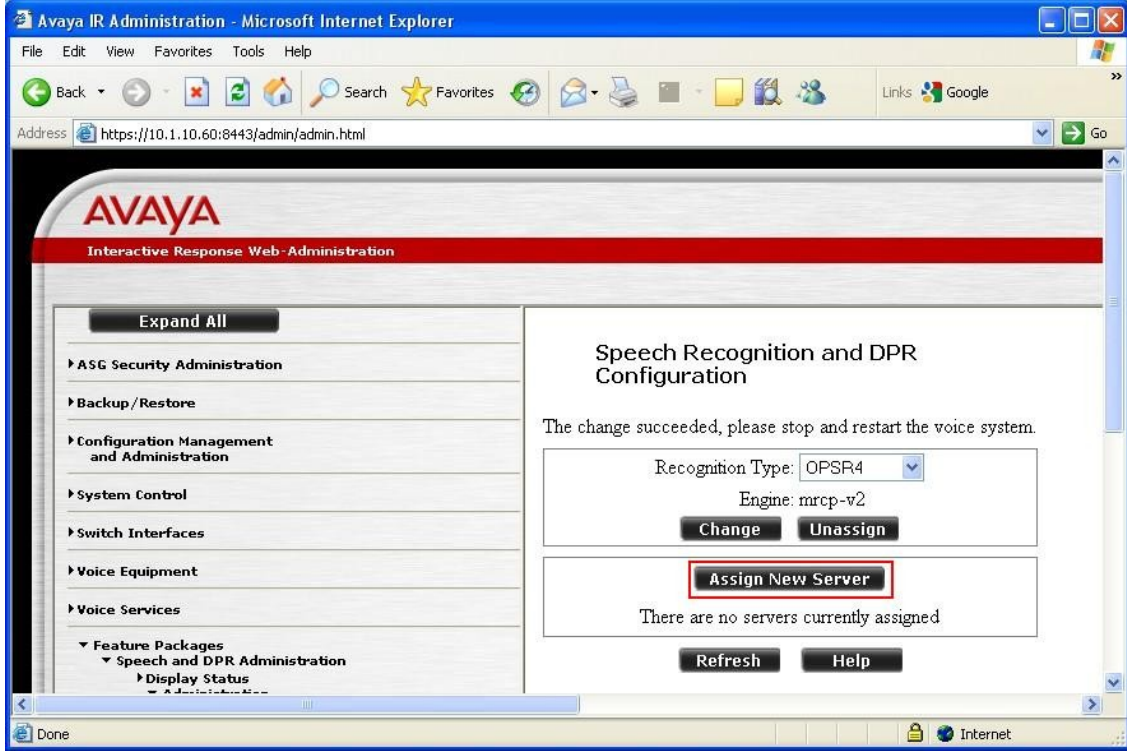
Step	Description
11.	<p>In the Assign Text-to-Speech Server page, set <b>Server Name</b> to the iFLYTEK Server Host Name and <b>IP Address</b> to the IP address of the iFLYTEK Server. Set <b>Ports</b> to the number of TTS channels available on the iFLYTEK Speech Server according to its installed license and click <b>Submit</b>.</p> 

Step	Description
12.	<p>The Text-to-Speech configuration on Avaya IR is complete. The Text-to-Speech Configuration page shows the configuration.</p>  <p>The screenshot shows the Avaya IR Administration web interface in a Microsoft Internet Explorer browser window. The address bar shows the URL: https://10.1.10.60:8443/admin/admin.html. The page title is "Avaya IR Administration - Microsoft Internet Explorer". The main content area is titled "Text-to-Speech Configuration". It displays the following configuration details:</p> <ul style="list-style-type: none"> <li>Default Voice: Xiaoyan (with a "Change" button)</li> <li>Text-to-Speech Type: TTS0 (dropdown menu)</li> <li>Engine: mrccp-v2 (with "Change" and "Unassign" buttons)</li> <li>Assign New Server button</li> <li>Server Name: iFLYTEK</li> <li>Server Type: Primary</li> <li>IP Address: 10.1.10.112</li> <li>Binding IP Address: 10.1.10.60</li> <li>Ports: 30</li> <li>Base Port: 5060</li> <li>Backup Server: Not Specified</li> <li>Secure SIP: FALSE</li> <li>Secure MRCP: FALSE</li> <li>Buttons: "Change", "Unassign", "Refresh", "Help"</li> </ul> <p>The left sidebar contains a navigation menu with the following items:</p> <ul style="list-style-type: none"> <li>Expand All</li> <li>ASG Security Administration</li> <li>Backup/Restore</li> <li>Configuration Management and Administration</li> <li>System Control</li> <li>Switch Interfaces</li> <li>Voice Equipment</li> <li>Voice Services <ul style="list-style-type: none"> <li>Feature Packages <ul style="list-style-type: none"> <li>Speech and DPR Administration <ul style="list-style-type: none"> <li>Display Status <ul style="list-style-type: none"> <li>Administration <ul style="list-style-type: none"> <li>Change Speech State</li> <li>Speech Recognition and DPR Configuration</li> <li>Text-to-Speech Configuration</li> <li>Help</li> </ul> </li> <li>Universal Call ID Administration</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>ROI-TCO Feature</li> <li>Reports</li> </ul>



Step	Description
13.	<p>To Configure Speech Recognition in Avaya IR, click <b>Feature Packages &gt; Speech and DPR Administration &gt; Administration &gt; Speech Recognition and DPR Configuration</b> in the left pane. Then click <b>Assign New</b>.</p>



Step	Description
14.	<p>In the Assign Speech Recognition or DPR Type page, set the <b>Engine</b> field to <b>mrctp-v2</b> as shown below. Click <b>Submit</b>.</p>  <p>The screenshot shows the Avaya IR Administration web interface in Microsoft Internet Explorer. The address bar shows the URL https://10.1.10.60:8443/admin/admin.html. The page title is 'Avaya IR Administration - Microsoft Internet Explorer'. The main content area is titled 'Assign Speech Recognition or DPR Type'. On the left, there is a sidebar with a tree view containing 'Expand All', 'ASG Security Administration', 'Backup/Restore', 'Configuration Management and Administration', 'System Control', and 'Switch Interfaces'. The main content area has two dropdown menus: 'Recognition Type' set to 'OPSR4' and 'Engine' set to 'mrctp-v2'. Below these are three buttons: 'Submit' (highlighted with a red box), 'Cancel', and 'Help'.</p>
15.	<p>In the Speech Recognition and DPR Configuration page, click <b>Assign New Server</b>.</p>  <p>The screenshot shows the Avaya IR Administration web interface in Microsoft Internet Explorer. The address bar shows the URL https://10.1.10.60:8443/admin/admin.html. The page title is 'Avaya IR Administration - Microsoft Internet Explorer'. The main content area is titled 'Speech Recognition and DPR Configuration'. On the left, there is a sidebar with a tree view containing 'Expand All', 'ASG Security Administration', 'Backup/Restore', 'Configuration Management and Administration', 'System Control', 'Switch Interfaces', 'Voice Equipment', 'Voice Services', and 'Feature Packages'. The main content area has a message: 'The change succeeded, please stop and restart the voice system.' Below this are two dropdown menus: 'Recognition Type' set to 'OPSR4' and 'Engine' set to 'mrctp-v2'. Below these are two buttons: 'Change' and 'Unassign'. Below these are two buttons: 'Assign New Server' (highlighted with a red box) and 'Refresh'. Below these are two buttons: 'Refresh' and 'Help'.</p>

Step	Description
16.	<p>In the Assign Speech Recognition or DPR Server page, set <b>Server Name</b> to the iFLYTEK Server Host Name and <b>IP Address</b> to the IP address of the iFLYTEK Server. Set <b>Ports</b> to the number of ASR channels available on the iFLYTEK Server according to its installed license and click <b>Submit</b>.</p>

The screenshot shows the Avaya IR Administration web interface in Microsoft Internet Explorer. The browser address bar displays `https://10.1.10.60:8443/admin/admin.html`. The page title is "Avaya IR Administration - Microsoft Internet Explorer". The main content area is titled "Assign Speech Recognition or DPR Server".

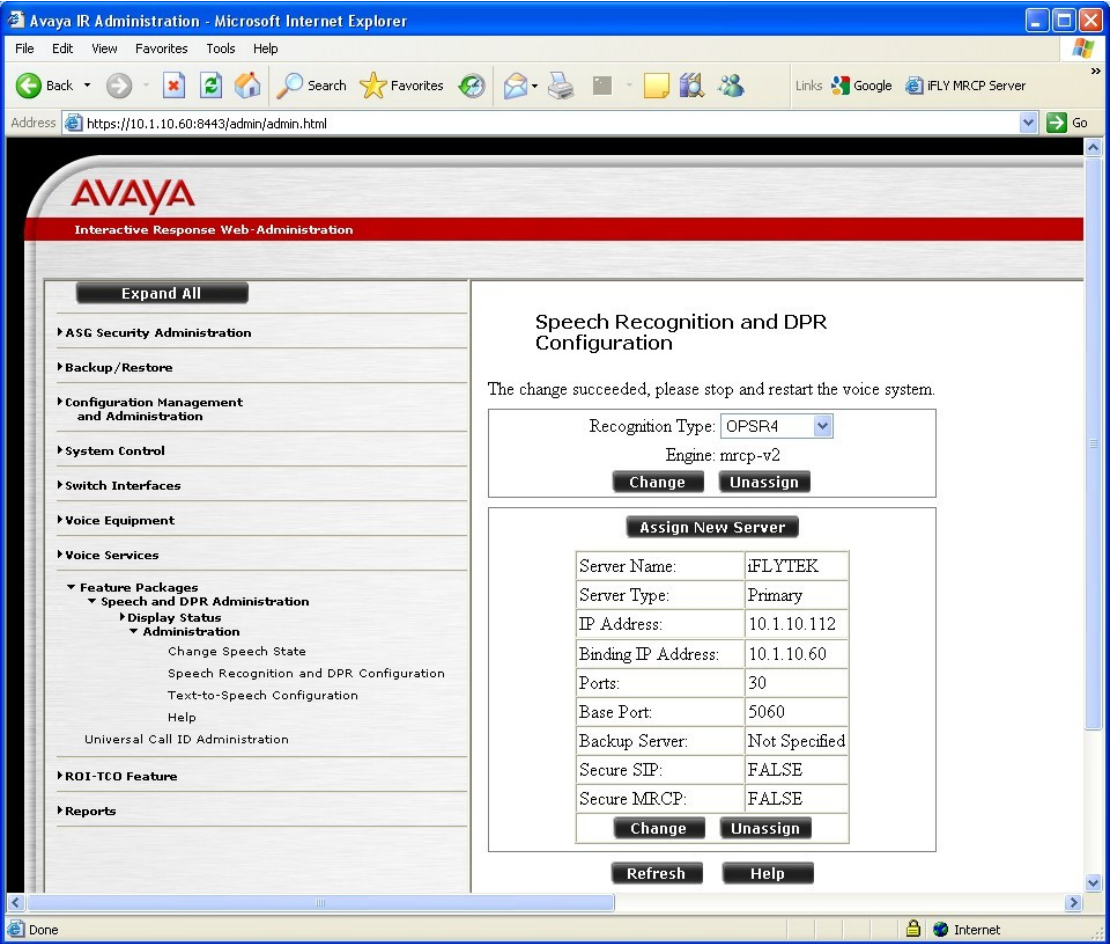
On the left, there is a sidebar with an "Expand All" button and a tree view of navigation options:

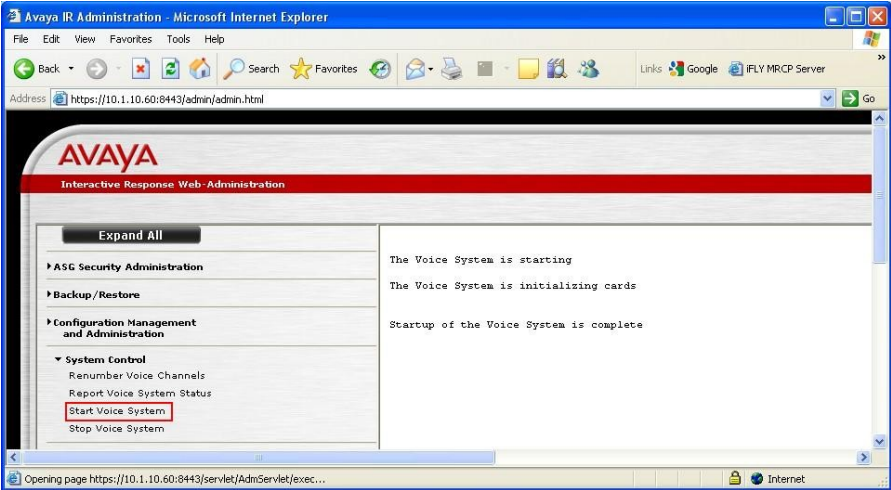
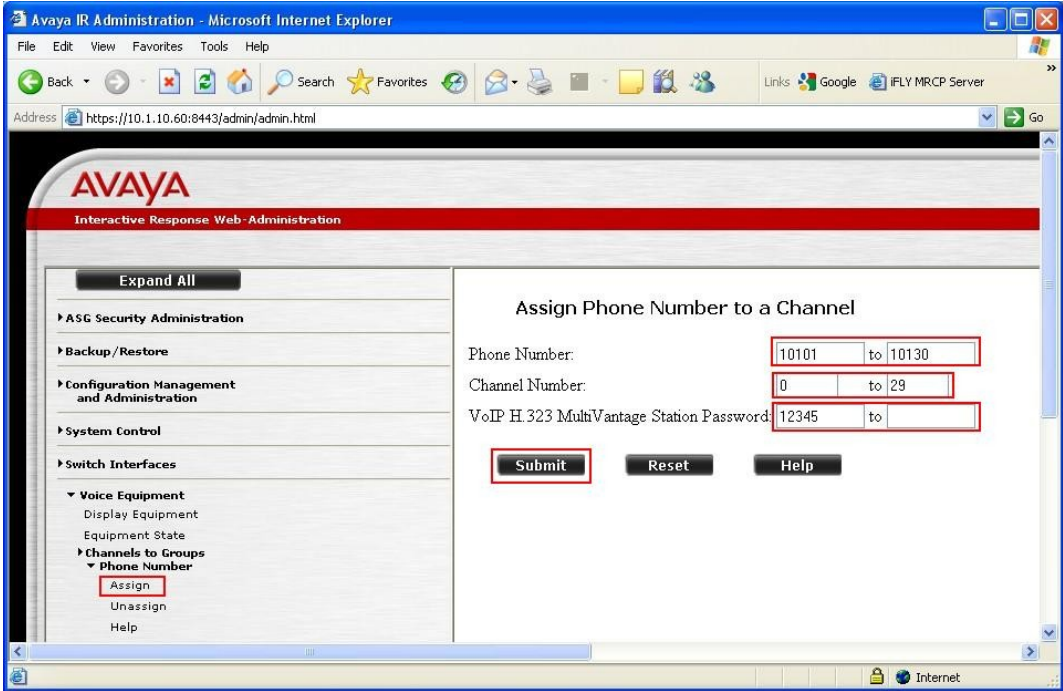
- ASG Security Administration
- Backup/Restore
- Configuration Management and Administration
- System Control
- Switch Interfaces
- Voice Equipment
- Voice Services
  - Feature Packages
    - Speech and DPR Administration
      - Display Status
      - Administration
        - Change Speech State
        - Speech Recognition and DPR Configuration
        - Text-to-Speech Configuration
        - Help
      - Universal Call ID Administration
- ROI-TCO Feature

The main form area contains the following fields:

- Recognition Type:
- Engine:
- Server Name:
- Server Type:
- IP Address:
- Binding IP Address:
- Ports:
- Base Port:
- Backup Server Name:  (Optional)
- Secure SIP:
- Secure MRCP:
- TLS Cipher String:

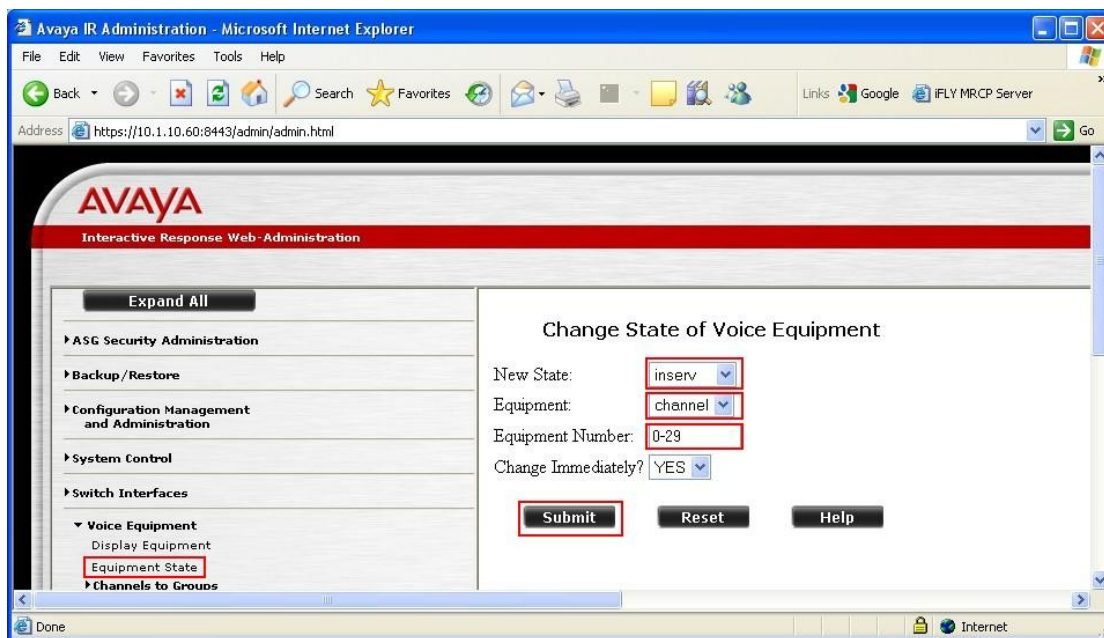
At the bottom of the form, there are four buttons: **Submit**, **Reset**, **Cancel**, and **Help**. The **Submit** button is highlighted with a red box.

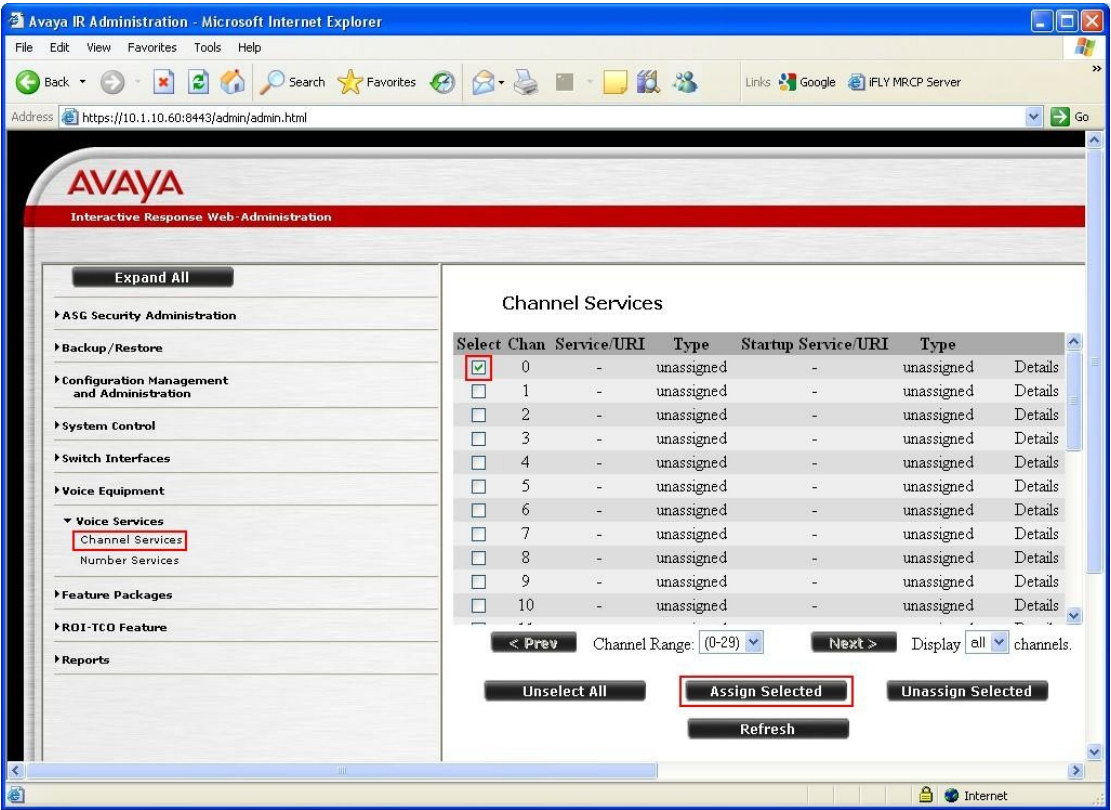
Step	Description
17.	<p>The Speech Recognition configuration on Avaya IR is complete. The Speech Recognition and DPR Configuration page shows the configuration.</p> 

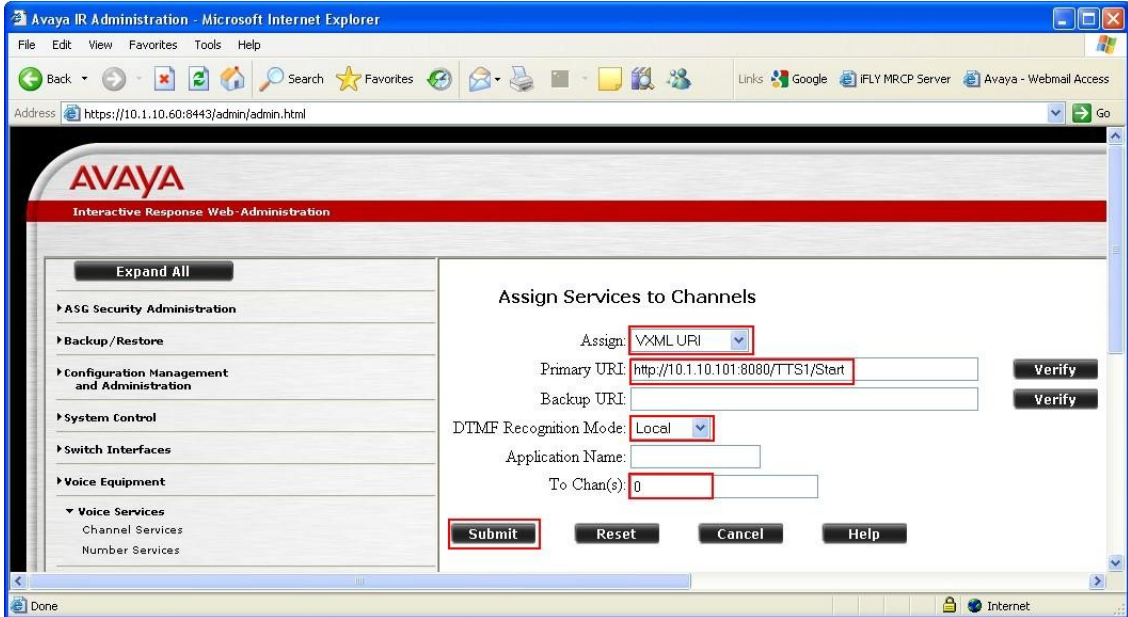
Step	Description
18.	<p>After the VoIP card, Text-to-Speech and Speech Recognition features are successfully configured, start the Voice System by clicking on <b>System Control &gt; Start Voice System</b>. When the Start Voice System page is displayed (not shown), click <b>Submit</b> and wait until the system displays a message indicating that the startup of the Voice System is complete.</p> 
19.	<p>To assign phone numbers to the channels, click <b>Voice Equipment &gt; Phone Number &gt; Assign</b>. On the Assign Phone Number to a Channel page, set <b>Phone Number</b> to 10101 to 10130, <b>Channel Number</b> to 0 to 29, and <b>VoIP H.323 MultiVantage Station Password</b> to the <b>Security Code</b> of the stations created in <b>Section 4 Step 3</b>. Click <b>Submit</b>.</p> 



Step	Description
20.	<p>To bring the channels into service, click <b>Voice Equipment &gt; Equipment State</b> on the left pane. Set <b>New State</b> to <b>inserv</b>, <b>Equipment</b> to <b>channel</b>, and <b>Equipment Number</b> to <b>0-29</b>, and click <b>Submit</b>.</p>



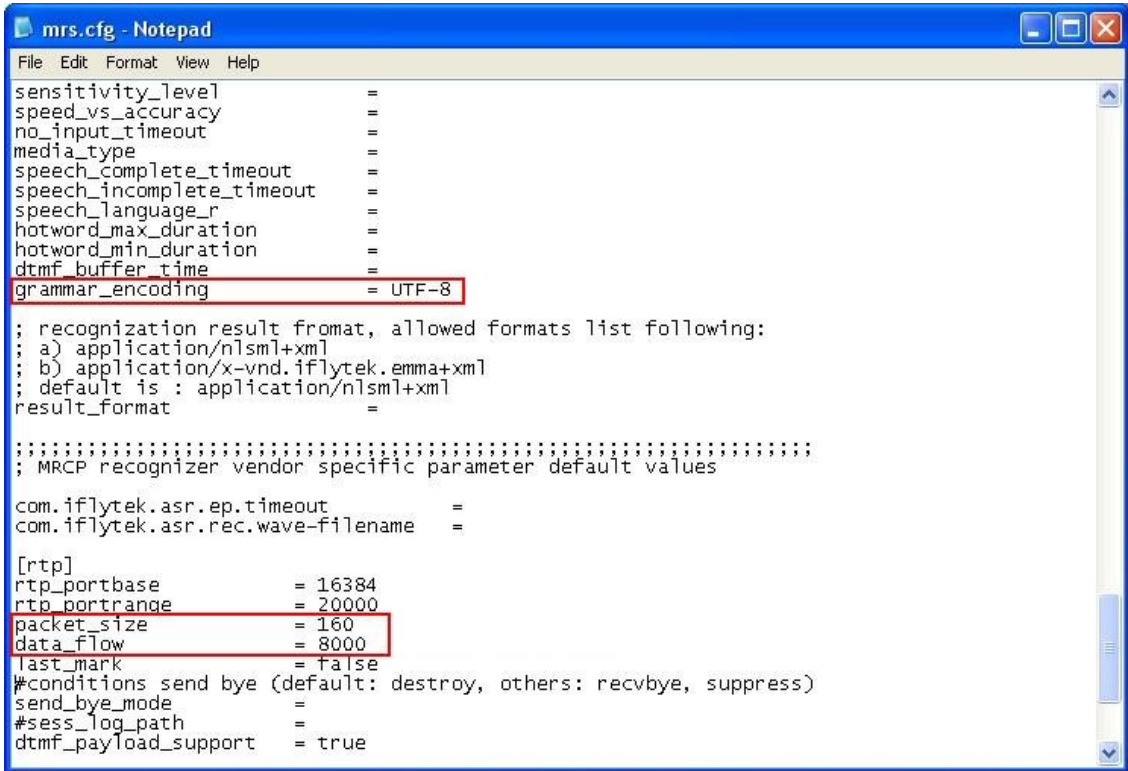
Step	Description
21.	<p>Assign a VoiceXML application to channel 0 (i.e., the first channel). This specifies which application would run when the channel receives a call. Click <b>Voice Services &gt; Channel Services</b> on the left pane to display the Channel Services page. Click the checkbox for <b>Chan 0</b> and then click <b>Assign Selected</b>.</p> <p>Note: It is assumed that the VoiceXML application has already been developed and is deployed on the Apache Tomcat server.</p>  <p>The screenshot shows the Avaya IR Administration web interface in a Microsoft Internet Explorer browser window. The address bar shows the URL https://10.1.10.60:8443/admin/admin.html. The left sidebar contains a tree view with the following items: Expand All, ASG Security Administration, Backup/Restore, Configuration Management and Administration, System Control, Switch Interfaces, Voice Equipment, Voice Services (expanded), Channel Services (selected), Number Services, Feature Packages, ROI-TCO Feature, and Reports. The main content area is titled 'Channel Services' and contains a table with the following columns: Select, Chan, Service/URI, Type, Startup Service/URI, Type, and Details. The table lists channels 0 through 10, all with 'unassigned' service URIs and 'unassigned' types. The checkbox for channel 0 is checked. Below the table are buttons for '&lt; Prev', 'Channel Range: (0-29)', 'Next &gt;', 'Display all channels.', 'Unselect All', 'Assign Selected' (highlighted with a red box), 'Unassign Selected', and 'Refresh'.</p>

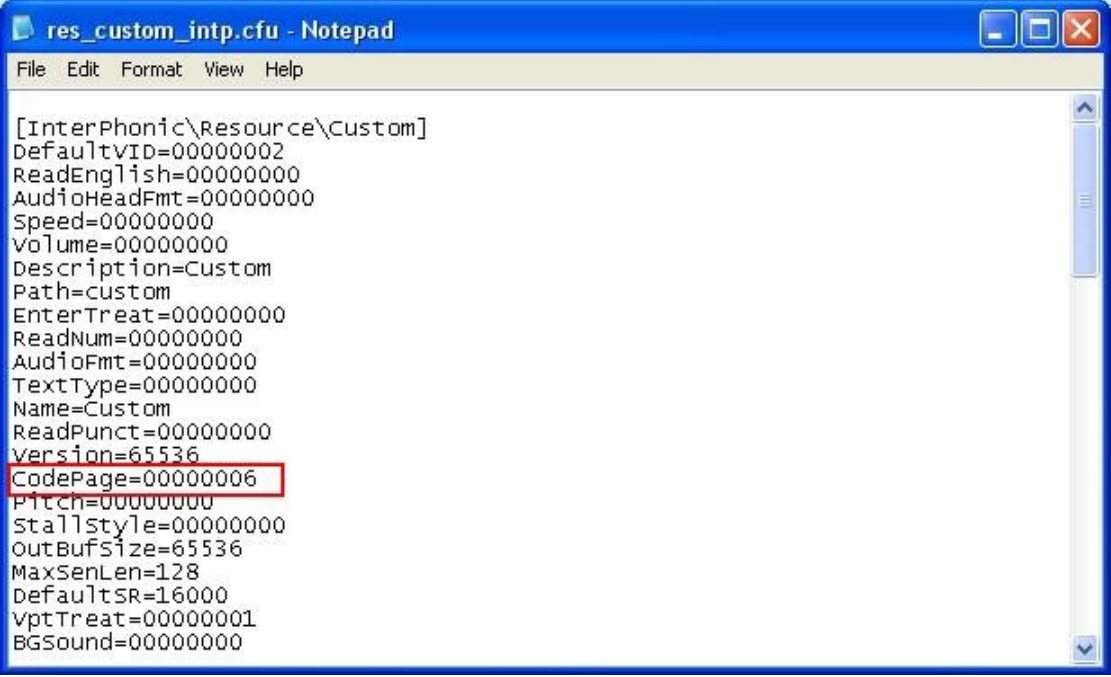
Step	Description
22.	<p>Configure the Assign Services to Channels page as shown. This configuration assigns a Dialog Designer VoiceXML application <b>TTS1</b> deployed on the Apache Tomcat Server to <b>Channel 0</b>. Set <b>Assign</b> to <b>VXML URI</b> and set <b>URI</b> to <b>http://&lt;IP address of Apache Tomcat server&gt;:8080/TTS1/Start</b>. Set <b>DTMF Recognition Mode</b> to <b>Local</b> as iFLYTEK Speech Server does not support DTMF Recognition. Click <b>Submit</b>. Repeat this procedure for all channels that should run this application. Note that the user may change the <b>To Chan(s)</b> field to <b>0-29</b> to assign the application to all the 30 channels in a single step.</p> 

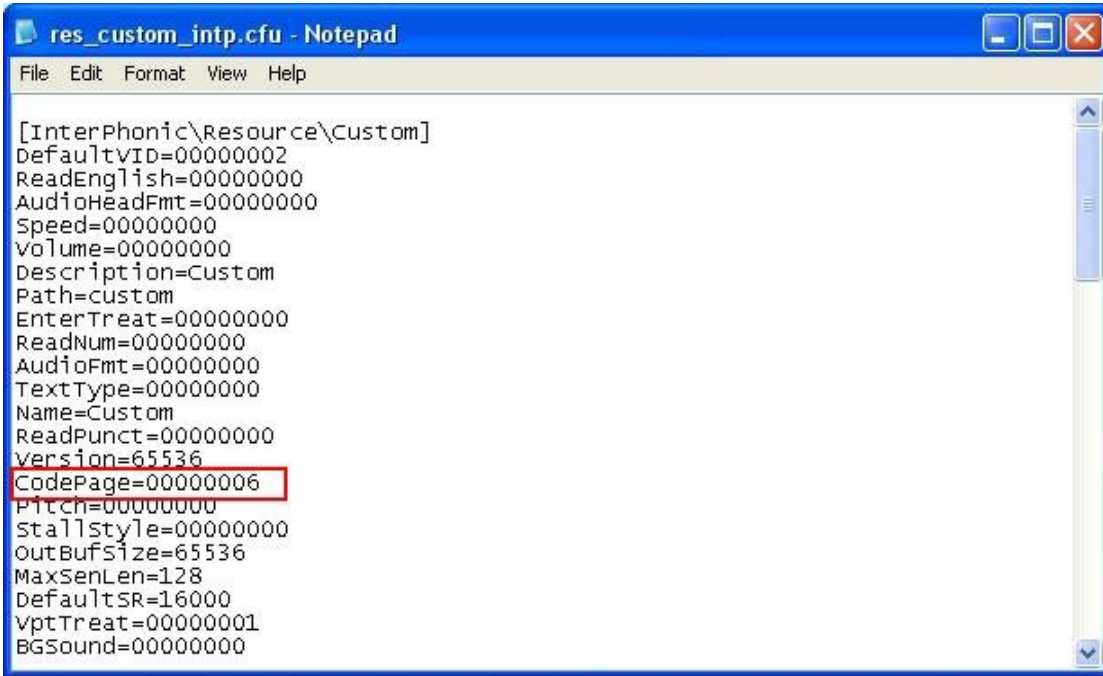
## 6. Configure iFLYTEK MRCP Server

The iFLYTEK MRCP Server requires the iFLYTEK InterPhonic and iFLYTEK InterReco products to be installed on the same server so as to provide the required TTS and ASR functionality. For load balancing, the optional iFLYTEK MRCP Resource Management Server software is required. For this compliance testing, the load balancing feature was not tested.



Step	Description
1.	<p>On the iFLYTEK MRCP Server, edit the file <b>mrs.cfg</b> located in the <b>C:\Program Files\iFly Info Tek\IMS3.5\cfg\</b> directory using Notepad.</p> <p>In the <b>[mrCP]</b> section, configure the following parameter to use UTF-8 as the encoding.</p> <pre>grammar_encoding      = UTF-8</pre> <p>In the <b>[rtp]</b> section, configure the following parameters:</p> <pre>packet_size           = 160 data_flow              = 8000</pre>  <p>Save the file and exit Notepad.</p>

Step	Description
2.	<p>Edit the file <b>res_custom_intp.cfu</b> located in the <b>C:\Program Files\iFly Info Tek\InterPhonic 6.0\lib\</b> directory using Notepad.</p> <p>In the <b>[InterPhonic\Resource\Custom]</b> section, configure the following parameter to set the appropriate value for codepage.</p> <p><b>CodePage=00000006</b></p>  <p>Save the file and exit Notepad.</p>

Step	Description
3.	<p>Edit the file <b>siegn.cfu</b> located in the <b>C:\Program Files\iFly Info Tek\InterReco 2.5\conf\</b> directory using Notepad.</p> <p>In the <b>[InterPhonic\Resource\Custom]</b> section, configure the following parameter to set the appropriate value for codepage.</p> <p><b>CodePage=00000006</b></p>  <p>Save the file and exit Notepad.</p>
4.	Reboot the iFLYTEK MRCP Server to effect the changes.

## 7. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to Avaya IR that ran VoiceXML applications that use the ASR and TTS engines in the iFLYTEK MRCP Server. The compliance test focused on placing calls to verify TTS and speech recognition.

The serviceability testing focused on verifying the ability of the iFLYTEK MRCP Server to recover from adverse conditions, such as power failures and disconnecting cables to the IP network.

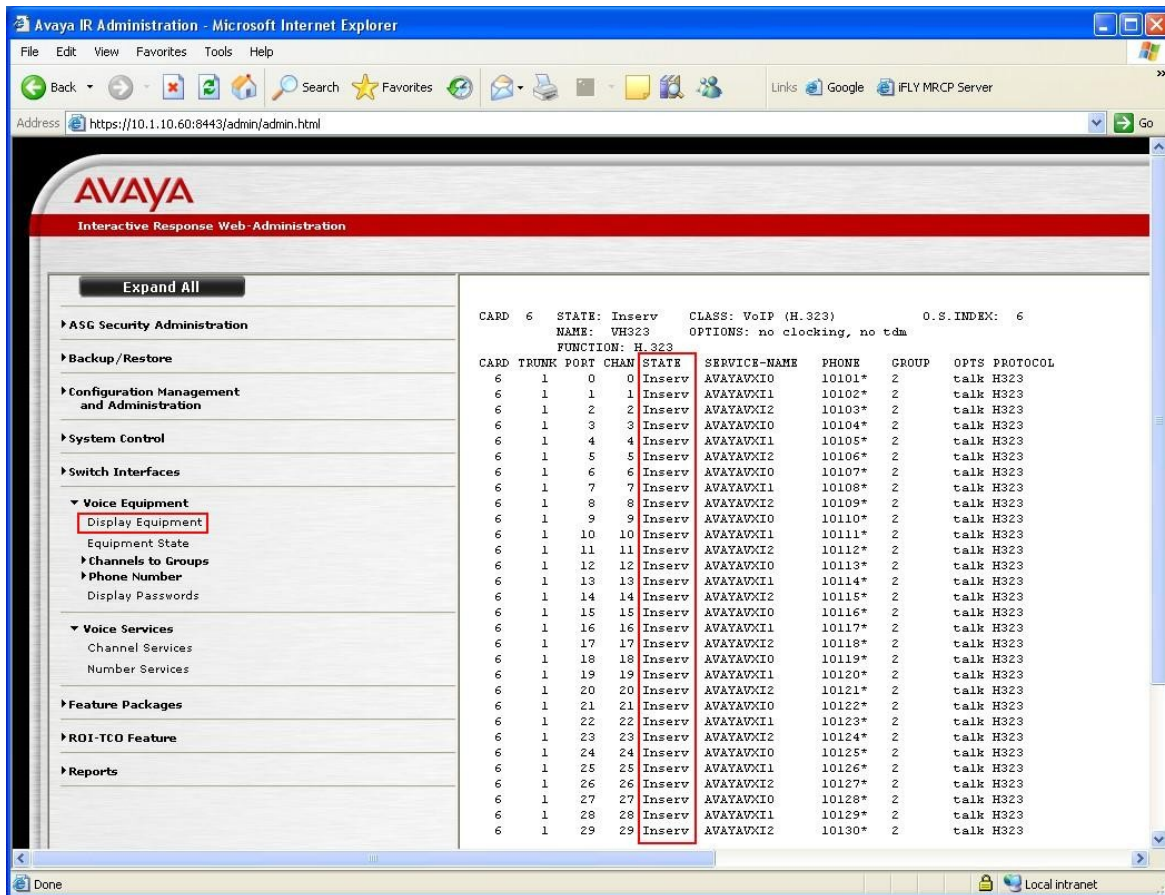
All test cases passed. Avaya IR was successful in running applications that use the ASR and TTS engines of the iFLYTEK MRCP Server.

## 8. Verification Steps

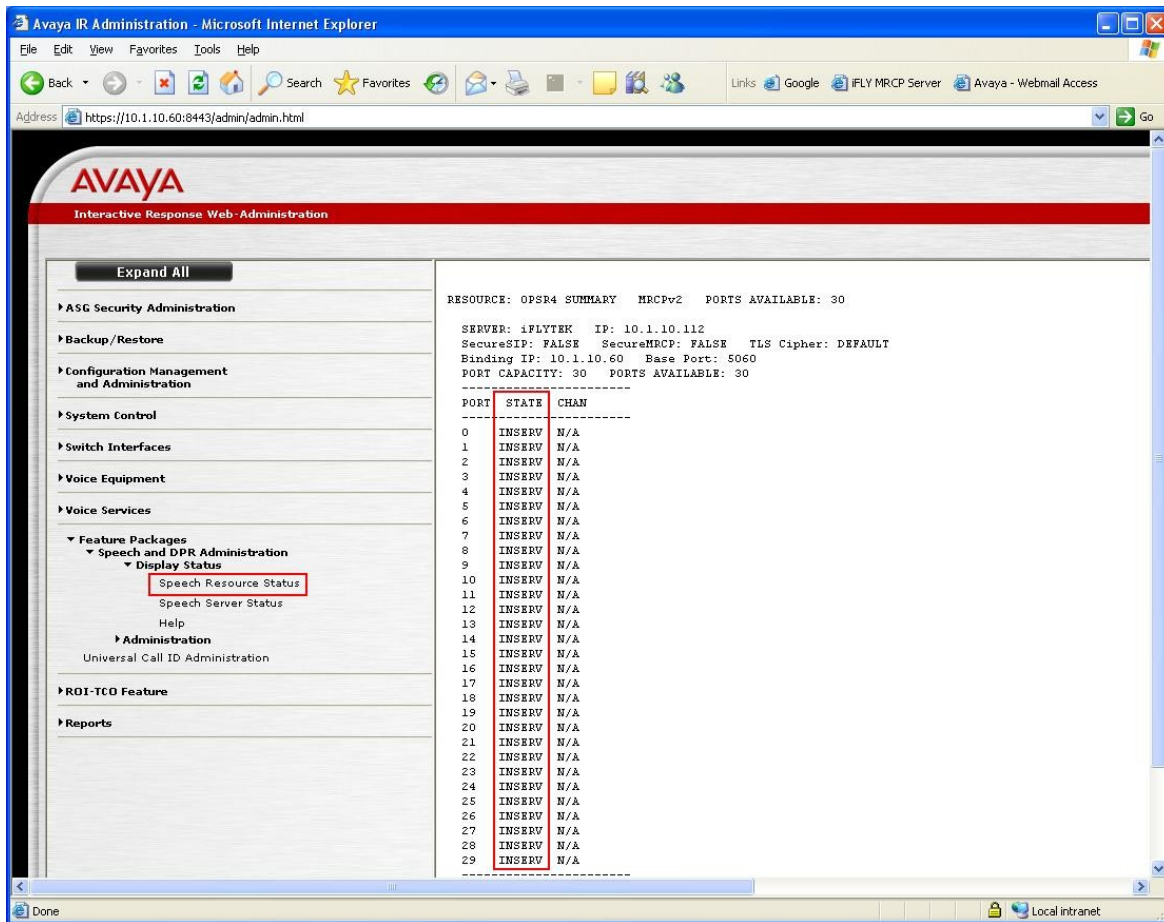
This section provides the verification steps that may be performed to verify that Avaya IR can run VoiceXML applications that use the iFLYTEK MRCP Server for ASR for TTS functionalities.

### 8.1. Verify Avaya Interactive Response

From the Avaya IR web interface, click **Voice Equipment > Display Equipment** in the left pane. Verify that the **STATE** field shows **Inserv** for all channels.



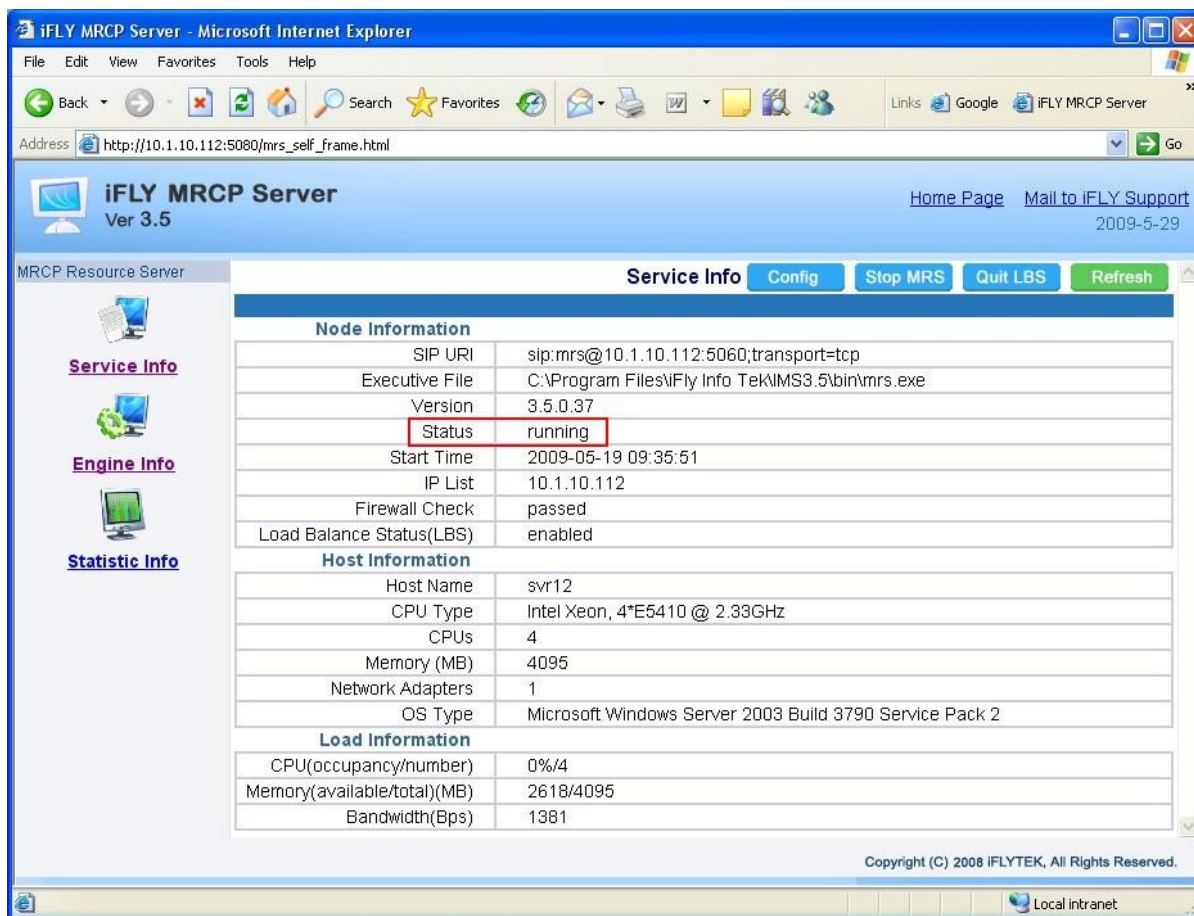
To check the status of the MRCP connection between Avaya IR and the iFLYTEK MRCP Server, click **Feature Packages > Speech and DPR Administration > Display Status > Speech Resource Status** and then select the **ASR Resource Type** associated with the iFLYTEK MRCP Server (e.g. OPSR4) and click **Submit** (not shown). Verify that the **STATE** field shows **INSERV** for all ports. Repeat by selecting the **TTS Resource Type** (e.g. TTS0).



## 8.2. Verify iFLYTEK MRCP Server

From a web browser, browse to [http://<ip\\_addr>:5080/mrs\\_self\\_frame.html](http://<ip_addr>:5080/mrs_self_frame.html), where <ip-addr> is the IP address of the iFLYTEK MRCP Server. Verify that the **Status** of the iFLYTEK MRCP Server shows **running**.





## 9. Conclusion

These Application Notes describe the steps required to configure Anhui USTC iFLYTEK InterPhonic and InterReco with Avaya Interactive Response (IR) using iFLYTEK MRCP Server. All feature and serviceability test cases were completed successfully.

## 10. Additional References

The following documents are available at <http://support.avaya.com>.

- [1] *Interactive Response 4.0 Documentation Library*, December 2008.
- [2] *Administrator Guide for Avaya Communication Manager*, Release 5.0, Issue 4.0, January 2008, Document Number 03-300509.

The following documents are available from iFLYTEK:

- [1] *iFLYTEK MRCP Server 3.5 User Guide*.

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