Avaya Solution & Interoperability Test Lab

Application Notes for Anhui USTC iFlyTek InterReco with Avaya Aura® Experience Portal – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Anhui USTC iFlyTek InterReco with Avaya Aura® Experience Portal. Anhui USTC iFlyTek uses the Media Resource Control Protocol (MRCP) version 2 for its Automatic Speech Recognition (ASR) features to interface with VoiceXML (VXML) applications running on the Avaya Aura® Experience Portal.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2,** to ensure that their own use cases are adequately covered by this scope and results.

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.

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1. Introduction

These Application Notes describe the configuration steps required to integrate Anhui USTC iFlyTek InterReco with Avaya Aura® Experience Portal. iFlyTek uses the Media Resource Control Protocol (MRCP) version 2 for its Automatic Speech Recognition (ASR) features to interface with the VoiceXML (VXML) applications running on Avaya Aura® Experience Portal.

iFlyTek InterReco is a speech recognition software product that provides voice recognition and call key navigation capabilities for self-voice services.

2. General Test Approach and Test Results

The general test approach is to manually make calls from Communication Manager to the incoming number of Experience Portal applications which in turn launch the speech applications. The appropriate voice responses are observed. Session details are also checked from the Experience Portal for the correct behavior, and system monitor are checked for any abnormality.

Throughout these Application Notes, the terms "iFlyTek" and "InterReco" will be used interchangeably in these Application Notes.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to Media Processing Platform (MPP) server in the Experience Portal system. These calls are used to verify speech recognition with barge in, time-out, resources unavailable, as well as simultaneous calls.

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, Experience Portal system restarts, and Communication Manager restarts.

2.2. Test Results

All test cases are successfully completed with the following observations:

1. InterReco only support external grammar.
2. InterReco does not support DTMF recognition.

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2.3. Support

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

- Phone: +86-551-5331813
- Email: tts_support@iFlyTek.com

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3. Reference Configuration

Figure 1 illustrates the test configuration used to verify the iFlyTek solution. iFlyTek InterReco runs on Linux. iFlyTek InterReco was installed on SUSE Server 11 with Service Pack 2. iFlyTek InterPhonic installed on Windows Server 2008 R2 with Service Pack was also setup for the TTS (Text-To-Speech) portion of the VoiceXML scripts during testing. VoiceXML scripts and VoiceXML applications were installed on a Microsoft Windows 2003 Server running Microsoft Internet Information Services (IIS) and accessed by Avaya Aura® Experience Portal. Avaya Aura® Experience Portal which comprise of Experience Portal Manager (EPM) and Media Processing Platform (MPP) are connected to Avaya Aura® Session Manager, Avaya Aura® System Manager and a duplex pair of Avaya Aura® Communication Manager; all running on VMware 5.x and a Avaya G430 Media Gateway. Avaya IP and Digital telephones were used to place SIP VoIP calls to Avaya Aura® Experience Portal, which would run the VoiceXML scripts and applications. The applications would then use iFlyTek InterReco for speech recognition.

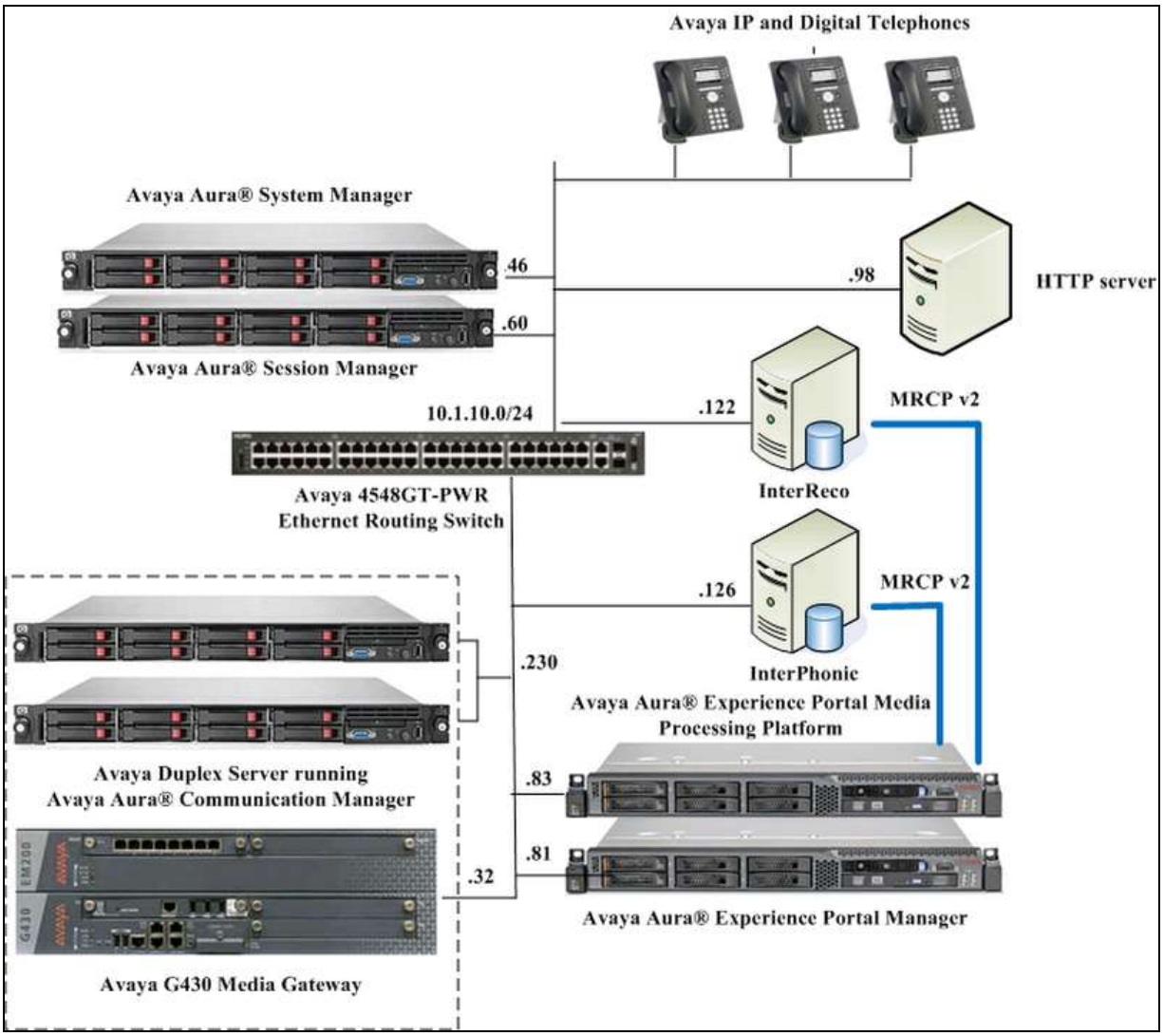

Figure 1: Test Configuration

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4. Equipment and Software Validated

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

Equipment	Software
Avaya Aura® Communication Manager	7.0 SP3 (R017.0.0.2.0.441.22856)
Avaya Aura® System Manager	7.0.0.2 (7.0.0.0.16266)
Avaya Aura® Session Manager	7.0 SP1 (7.0.0.2.700102)
Avaya Aura® Experience Portal EPM MPP	 7.0.2.0.317 7.0.2.0.0303
Avaya 4548GT-PWR Ethernet Routing Switch	FW: 5.3.0.3 SW: v5.6.1.052
96x1 Series IP Deskphone (H.323)	6.6029
96x1 Series IP Deskphone (SIP)	7.0.0.39
94xx Series Digital Deskphone	FW 15
InterPhonic running on Windows 2008 R2	IMS 3.7_r1068+TTS 6.5.0.7900
InterReco running on SUSE 11 SP2	IMS 3.7_r1073+ISR60_r1031

Note – The Avaya Aura® servers and iFlyTek servers used in the reference configuration and shown on the table were deployed on a virtualized environment. These Avaya components ran as virtual machines over VMware® (ESXi 5.X) platforms. Consult the installation documentation on the **References** section for more information.

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5. Configure Avaya Communication Manager

The configuration of the SIP Trunks between Communication Manager and Session Manager, and the routing of calls to Experience Portal are assumed to be in place and will not be discussed here. This section provides the additional procedures to configure Communication Manager for the purpose of administering iFlyTek. The configuration is performed via the System Access Terminal (SAT).

Step	Description
1.	Enter the **change ip-codec-set n** command where **n** is a valid IP codec-set associated with the IP network region that is used by Experience Portal, typically the IP network region assigned to the Session Manager SIP Trunk signaling group. Set **Audio Codec** to an appropriate value supported by Avaya Experience Portal and InterReco. In this configuration, the **G.711Mu** codec was used.

```
change ip-codec-set 6                                          Page   1 of   2

                           IP Codec Set

   Codec Set: 6

   Audio         Silence      Frames   Packet
   Codec         Suppression  Per Pkt  Size(ms)
 1: G.711MU           n         2        20
 2:
 3:
 4:
 5:
 6:
 7:
```


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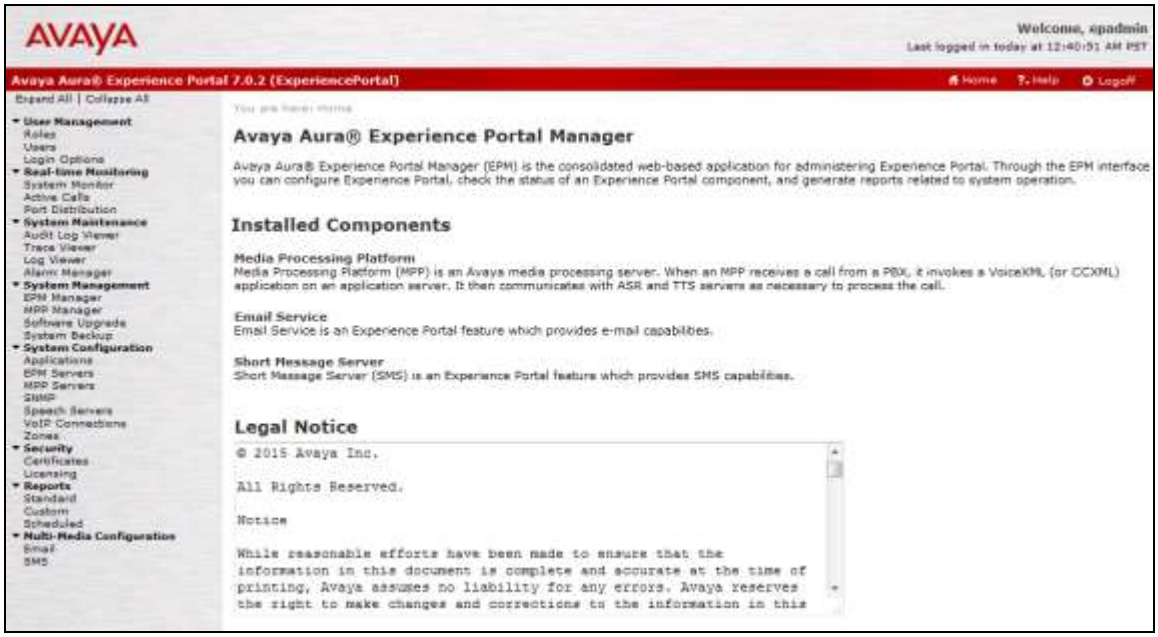
6. Configure Avaya Aura® Experience Portal

The initial administration of Avaya Experience Portal and the configuration of the SIP VoIP Connection to Session Manager are assumed to be in place and will not be discussed here. This section covers the additional procedures of Avaya Experience Portal that is required for the purpose of administering iFlyTek. The following steps will be covered:

- Configuring the VoIP audio format
- Adding iFlyTek as a ASR server
- Adding applications

Step	Description
1.	Avaya Experience Portal is configured via the EPM web interface. To access the web interface, enter **https://<ip-addr>/VoicePortal/** as the URL in an internet browser, where **<ip-addr>** is the IP address of the EPM. Log in using an account with the Administration role to display the main page. 

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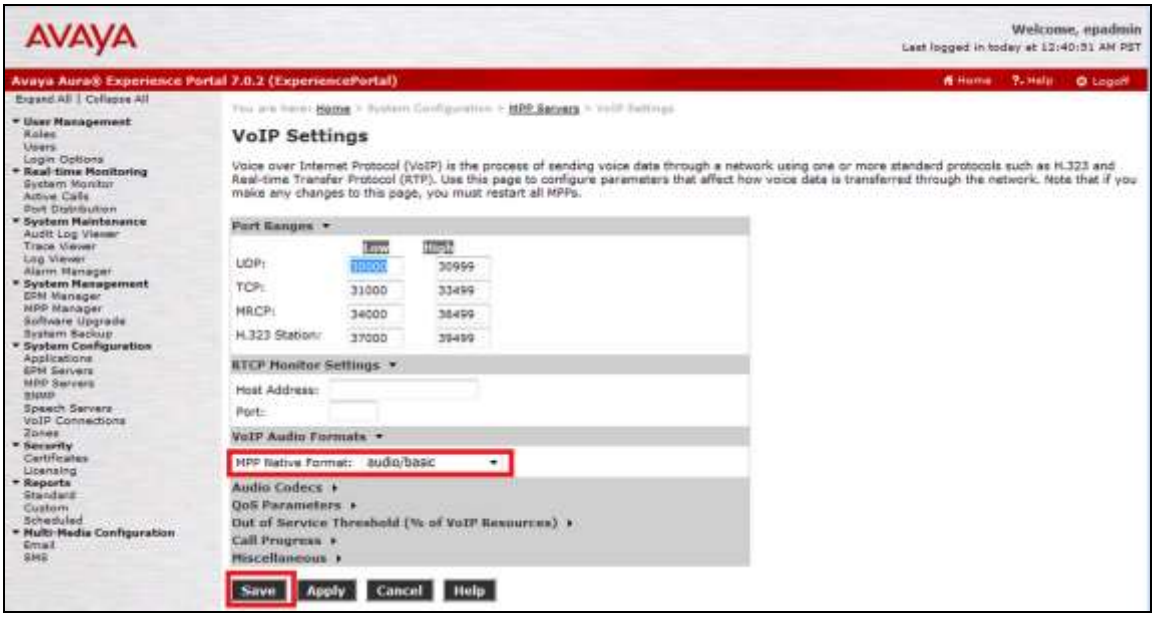
Step	Description
2.	To configure the codec used by the Media Processing Platform (MPP) server, click **System Configuration → MPP Servers** in the left pane and click **VoIP Settings**.
3.	Set **MPP Native Format** to **audio/basic** to configure the MPP server for G.711 mu-law to match the configuration on Communication Manager in **Section 5**. Scroll down the page and click **Save**. 
4.	iFlyTek is not natively included in the set of ASR engines supported by Avaya Experience Portal and will not initially appear in the ASR configuration screen. To add iFlyTek to the list of supported engines, log into the EPM server, either locally or remotely through Secure Shell (SSH), and locate the **languages.properties** file found in **/opt/Tomcat/apache-tomcat-6.0.43/webapps/VoicePortal/WEB-INF/classes/messages**. Edit the file and add the lines shown below to the appropriate section.

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Step	Description

```
< Some lines removed for brevity >

# THIS SECTION IS SPECIFIC TO EXPERIENCE 7.0
# 1. ADD ANY NEW PROPERTIES FOR EXPERIENCE 7.0 TO ADDITIONS SECTION WITHIN 7.0
SECTION.
# 2. TO MODIFY A PRE-EXISTING PROPERTY, MOVE IT TO MODIFICATIONS SECTION WITHIN
7.0 AND THEN MODIFY IT.
# 3. TO DELETE A PRE-EXISTING PROPERTY, MOVE IT TO DELETIONS SECTION WITHIN 7.0
AND THEN COMMENT IT OUT.
##########################################################################
#{{START:PROPERTIES:EXPERIENCEPORTAL_7.0:ADDITIONS
# Specify any new properties for Experience Portal 7.0 here.
iFlyTekMRCPLabels=MRCP V1, MRCP V2
iFlyTekTransportLabels=TCP
#}}END:PROPERTIES:EXPERIENCEPORTAL_7.0:ADDITIONS

< remaining lines removed for brevity >
```


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Step	Description
5.	Locate the **languages.properties** file found in **/opt/Tomcat/apache-tomcat-6.0.43/webapps/VoicePortal/WEB-INF/classes/config**. Edit the file by adding the fields and lines shown below to the appropriate section.

```
#
# Engine Type options displayed on the page
#
asrEngines=iFlyTek,IBM WVS,Loquendo,Nuance
ttsEngines=iFlyTek,IBM WVS,Loquendo,Nuance
asrEnginesAmsOnly=Nuance
ttsEnginesAmsOnly=Nuance

# Engine Type conversion from display to internal data in the databas
iFlyTekASR=iFlyTek interreco
iFlyTekTTS=iFlyTek Interphonic
IBMWVSASR=ibm wvs
IBMWVSTTS=ibm wvs
NuanceASR=nuance osr
NuanceTTS=nuance realspeak
LoquendoASR=loquendo
LoquendoTTS=loquendo

# Engine Type conversion from internal data in the database to display
iFlyTekinterreco=iFlyTek
iFlyTekInterphonic=iFlyTek
ibmwvs=IBM WVS
nuanceosr=Nuance
nuancerealspeak=Nuance
nuancequantum=Nuance
loquendo=Loquendo

# Languages

< Some lines removed for brevity >

iFlyTekASRlanguages=zh-CN,en-US

#
# Language Default
#
< Some lines removed for brevity >

iFlyTekASRlanguagesDefault=en-US

#
# default base port
#
< Some lines removed for brevity >
iFlyTekBasePort=1554
#
# default New Connection per Session
#
< Some lines removed for brevity >

iFlyTekPerPort=Yes
#
# default URL
#
< Some lines removed for brevity >
```


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Step	Description
	iFlyTekRtspUrlAsr=/media/recognizer # # Grammar Type # < Some lines removed for brevity > **iflytekinterrecoGrammarType=sisr** # # MRCP Protocol # < Some lines removed for brevity > **iFlyTekMRCPValues=mrcpv1,mrcpv2** # # Transport # < Some lines removed for brevity > **iFlyTekTransportValues=tcp** < remaining lines removed for brevity >
6.	Reboot the EPM server for the above changes to take effect.
7.	To configure the iFlyTek InterReco, click **System Configuration → Speech Servers**. Click the **ASR** tab and click **Add**.
8.	In the **Add ASR Server** page, select **iFlyTek** as the **Engine Type**. This engine type option was added by modifying the **languages.properties** files in **Steps 4** and **5**. Specify the **Name**, select **Yes** to **Enable**, set **Network Address** to the IP address or Full FQDN of the iFlyTek Server. Set the **Base Port** to 5060. The **Total Number of Licensed ASR Resources** should also be set to the number of licenses available on the iFlyTek Server. Select the **Languages** to use by highlighting them. In the **MRCP** section, set **Protocol** to **MRCP V2**. All other fields were left at their default values. Click **Save**.

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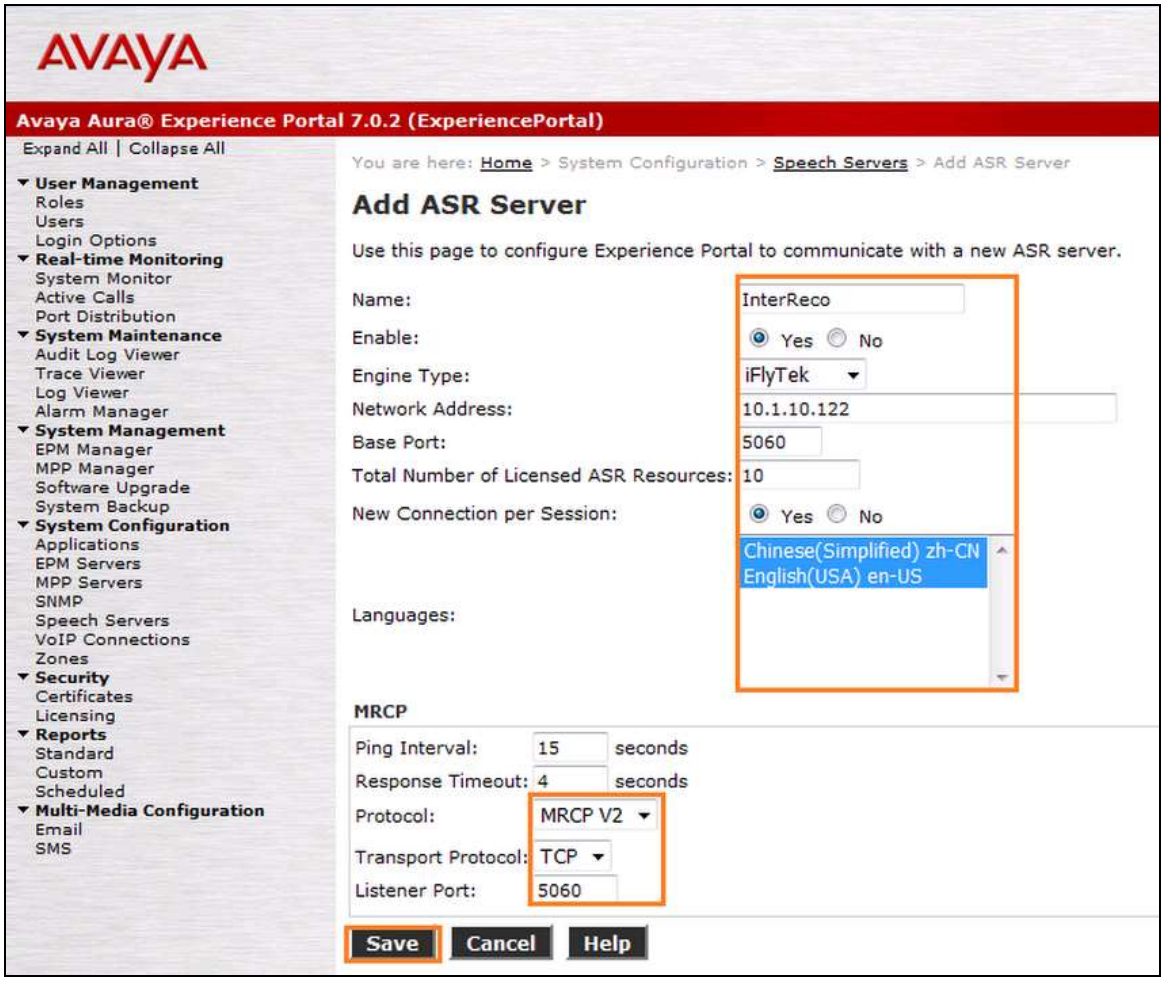
Step	Description
	
9.	To assign InterReco to an Avaya Experience Portal application, click **System Configuration → Applications** and then click **Add** on the Applications page (not shown). The **Change Application** page shown on the next page highlights the configuration changes. This configuration assigns the default Avaya Experience Portal test application deployed on the http server to the called number **10391**. Specify the **Name**, select **Yes** to **Enable**, set **Type** to **VoiceXML** for the MIME and set **VoiceXML URL** to HTTP server address location of the VoiceXML script. Select **iFlyTek** for **ASR** and then highlight the appropriate **Voices** to use. Repeat this procedure to assign InterReco to other Experience Portal applications.

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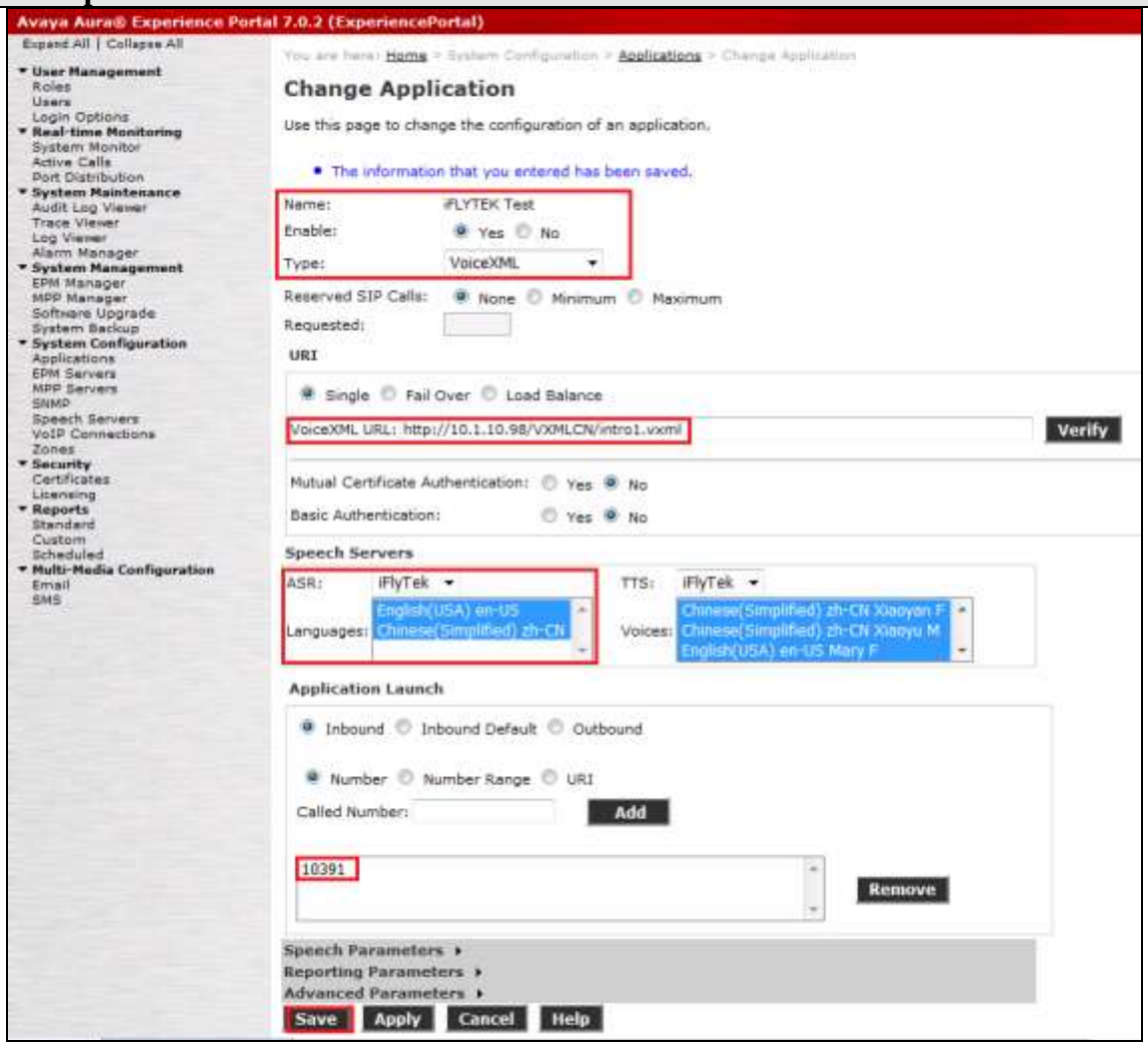
Step	Description
	

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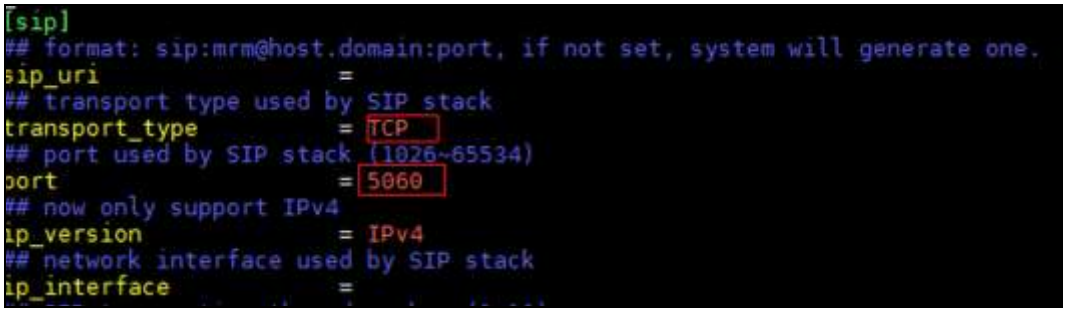
7. Configure iFlyTek Server

The iFlyTek MRCP Server requires the iFlyTek InterReco products to be installed on the same server so as to provide the required ASR functionality. The relevant software was loaded by iFlyTek engineers which is not be detailed here. Refer to the Installation Manual for InterReco in the **Additional References** section. 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.	On the iFlyTek Server, edit the file **mrs.cfg** located in the **/opt/ims3.7/cfg/** directory using VI editor. In the **[sip]** section, check the following parameters for the SIP transport. Transport_type = TCP Port=5060 

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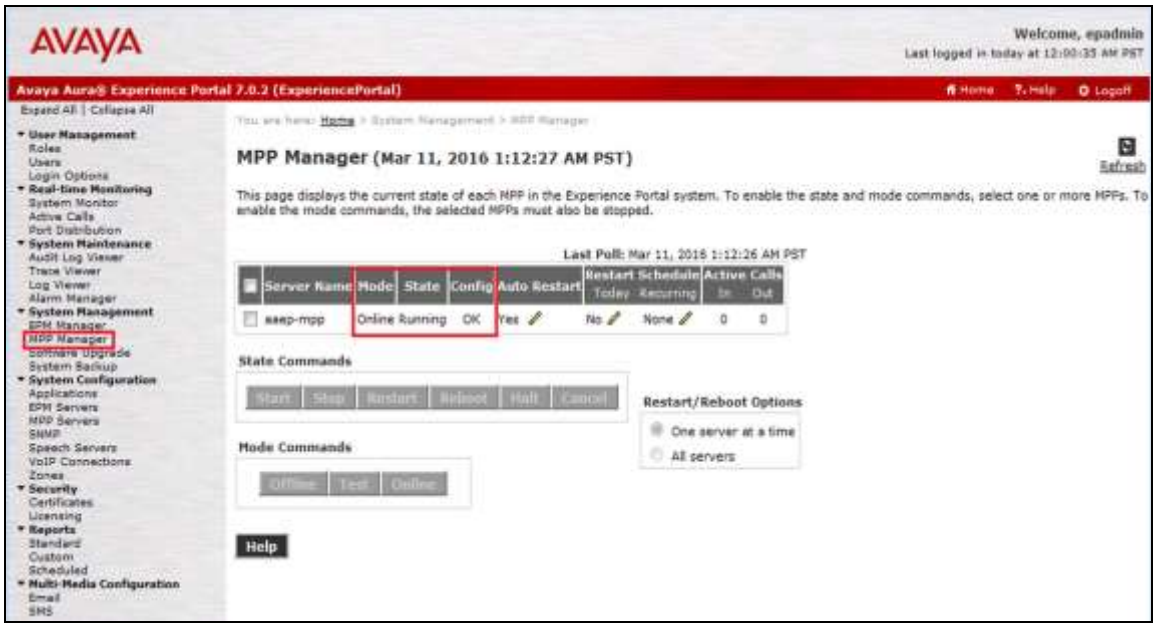
8. Verification Steps

This section provides the verification steps that may be performed to verify that Avaya Experience Portal can run VoiceXML applications that use the iFlyTek Server for ASR functionalities.

8.1. Verify Avaya Aura® Experience Portal

Step	Description
1.	From the Experience Portal Manager web interface, click **System Management > MPP Manager**. On the MPP Manager page, verify that the MPP server is **Online**, **Running** and **Config** is **OK**. 

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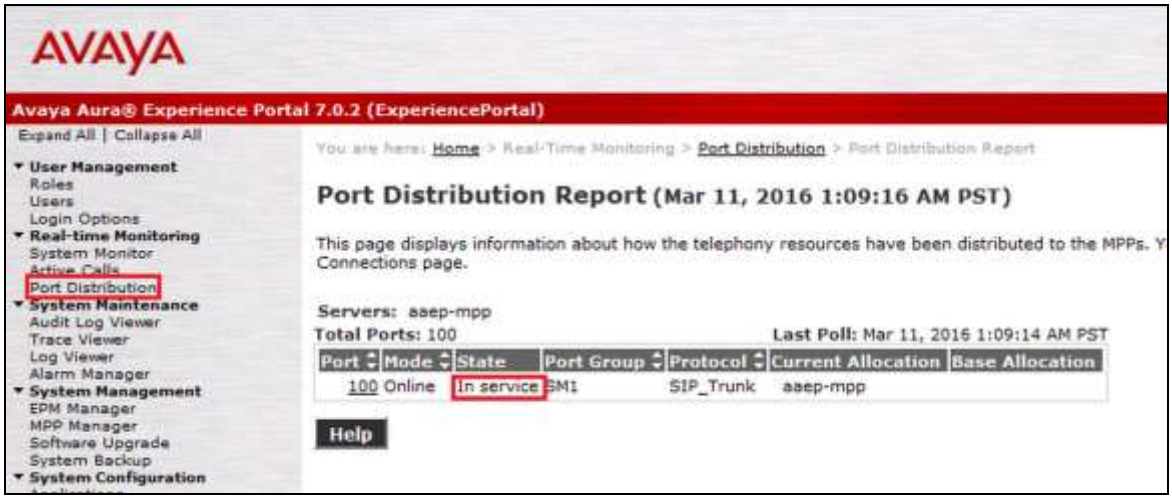
Step	Description
2.	From the Experience Portal Manager web interface, click **Real-Time Monitoring > Port Distribution** (not shown). Select the appropriate MPP server and click **OK**. On the **Port Distribution Report** page, verify that the **State** of the ports of the MPP server is **In service**. 
3.	Place a call to Avaya Experience Portal that runs a VoiceXML script which uses the iFlyTek Server for speech recognition. Verify that the application recognize the speech of the caller.

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8.2. Verify iFlyTek Server

Make test calls to the Avaya Experience Portal to verify that the ASR is running and is able to recognize the speech of the caller.

9. Conclusion

These Application Notes describe the configuration steps required for Anhui USTC iFlyTek InterReco with Avaya Aura® Experience Portal. All feature and serviceability test cases were completed successfully with observations noted in **Section 2.2**.

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10. Additional References

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

[1] *Administering Avaya Aura® Experience Portal*, Release 7.0.1, April 2015.
[2] *Deploying Avaya Aura® Experience Portal in an Avaya Customer Experience Virtualized Environment*, Release 7.0.1, November 2014.
[3] *Administering Avaya Aura® Communication Manager*, Release 7.0, Issue 1, August 2015, Document Number 03-300509.
[4] *Deploying Avaya Aura® Communication Manager in Virtualized Environment*, Release 7.0, Issue 1, August 2015.
[5] *Administering Avaya Aura® Session Manager*, Release 7.0, Issue 1, August 2015.
[6] *Deploying Avaya Aura® Session Manager on VMware®*, Release 7.0, Issue 1, August 2015.

The following documents can be obtained from iFlyTek:

[1] *InterReco 6.0 &IMS 3.7 for Linux Installation Manual*, Version 1.0

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