Avaya Solution & Interoperability Test Lab

Application Notes for InfoTalk-Recognizer with Avaya Interactive Response and Avaya Communication Manager – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for InfoTalk-Recognizer to successfully interoperate with Avaya Interactive Response (IR) and Avaya Communication Manager. VoiceXML applications running on the Avaya IR platform utilize the Advanced Speech Recognition (ASR) features of InfoTalk-Recognizer 8.5 using the Media Resource Control Protocol (MRCP) Version 1. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the compliance-tested configuration utilizing Avaya IR 1.3, Avaya Communication Manager 3.0.1 and InfoTalk-Recognizer 8.5. VoiceXML applications running on the Avaya IR 1.3 platform utilize the Advanced Speech Recognition (ASR) features of InfoTalk-Recognizer 8.5 using the Media Resource Control Protocol (MRCP) Version 1.

InfoTalk-Recognizer 8.5, a conversational speech recognition engine developed by InfoTalk Corporation, is a tool that helps businesses deliver more personalized and more customized service on demand.

By using the most natural form of communication - the human voice, the enhanced high-performance voice-enabled applications powered by InfoTalk-Recognizer ensure accuracy and flexibility, even under noisy conditions and through mobile networks.

With InfoTalk-Recognizer, users can navigate and jump through call menus easily to reach the service needed. Even more importantly, they can speak in mixed languages (such as English and Mandarin) and continuously, being confident that they will be clearly and accurately understood.

InfoTalk-Recognizer caters to a wide range of languages and dialects that are commonly used in Asia, the Americas and Europe, and flexibly handles accent variations.

InfoTalk-Recognizer has a user-friendly interface and scalable architecture. Advanced and sophisticated technologies including grammar development and voice data indexing technologies as well as grammar tools are the key capabilities that, among others, help developers easily deploy voice-enabled solutions on most technical infrastructures.

MRCP is an emerging, open standard for speech interfaces that supports the interoperability of vendor systems. MRCP addresses the communications between interactive voice response systems like the Avaya IR 1.3 and specialized speech engines such as the InfoTalk-Recognizer 8.5 ASR engine. MRCP Version 1 uses the Real Time Streaming Protocol (RTSP) to establish connections from an MRCP client application to an MRCP server. All MRCP commands are then tunneled via RTSP Announce messages between the MRCP client and server. Audio data (speech spoken by the caller) is then carried over a Real-time Transport Protocol (RTP) connection.

InfoTalk-Recognizer is a software solution running both the InfoTalk-Recognizer 8.5 ASR engine and the InfoTalk MRCP Server 1.0 application on a Microsoft Windows 2000/2003 Server, or Windows 2000/XP Professional machine.

Figure 1 illustrates the configuration used to verify the InfoTalk-Recognizer solution. The InfoTalk-Recognizer 8.5 and InfoTalk MRCP Server 1.0 software were installed on a Windows XP Professional machine with Service Pack 2. VoiceXML scripts that used the ASR engine were installed on Avaya IR 1.3. The S8500B Media Server and G650 Media Gateway interfaced

with the Avaya IR using the Voice over IP (VoIP) feature on Avaya IR. With VoIP, transmission to the switch is achieved without digital interfaces (T1/E1). Instead, all transmissions occur over the packet network using the network interface card (NIC) on the Avaya IR system. As stated in [1], a dedicated network is generally used to connect the switch to the Avaya IR system. The main reason for using a dedicated network is to guarantee voice quality without using complex bandwidth management technologies. A dedicated network was not required for the compliance test, due to the low level of traffic in the test network. Avaya IP phones were used to place calls to the Avaya IR to run the VoiceXML scripts. Both internal calls and calls over the PSTN were placed so as to simulate different calling environments. The scripts would use the ASR engine to recognize the speech spoken by the caller and also verify DTMF presses and barge-in attempts. Speech between the Avaya Communication Manager and Avaya IR, as well as speech between Avaya IR and the ASR engine was encoded using G.711 mu-law.

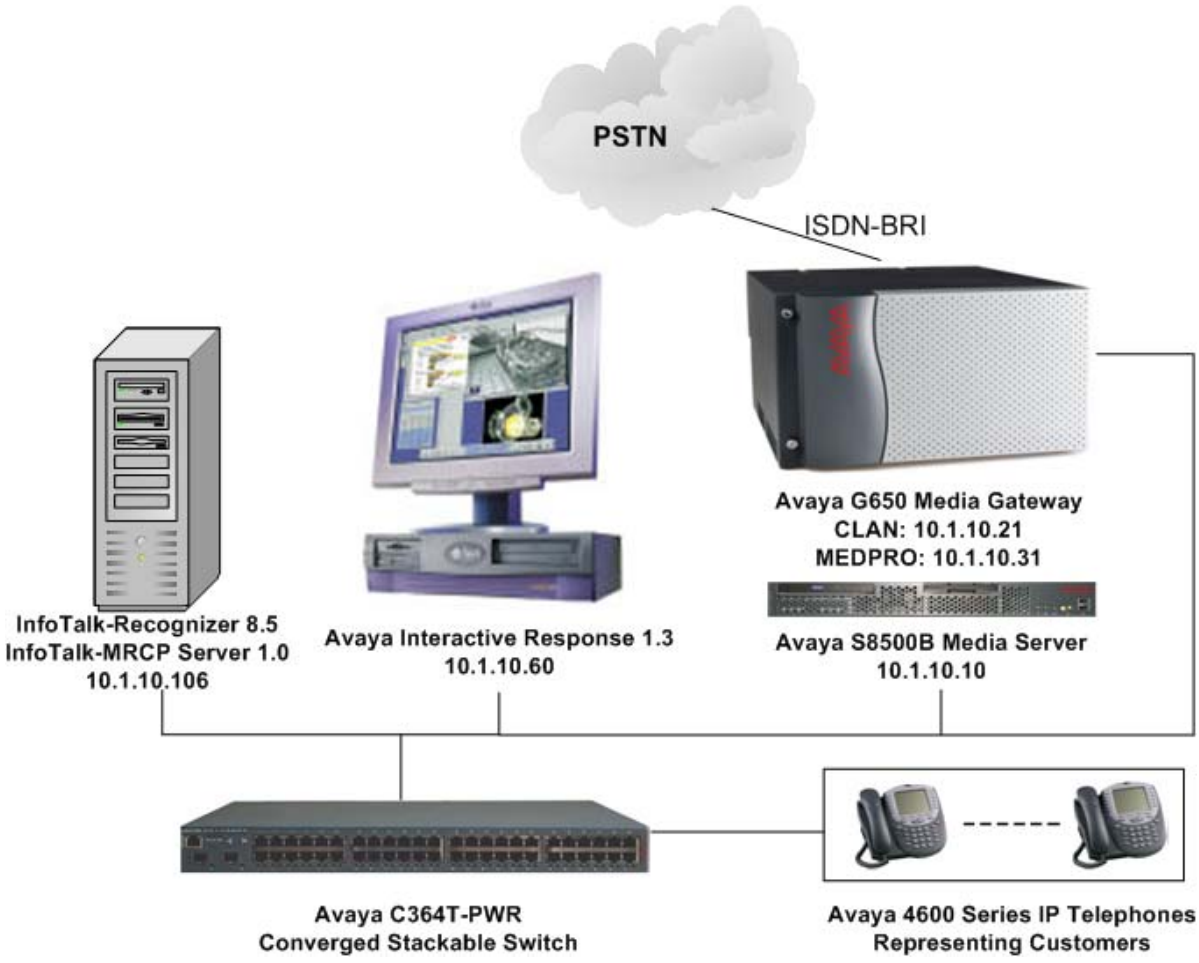


Figure 1: InfoTalk-Recognizer 8.5 with Avaya IR 1.3 Configuration

2. Equipment and Software Validated

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

Equipment	Software
Avaya Interactive Response on SunBlade 150	1.3
Avaya S8500B Media Server	R013x.00.1.346.0 (3.0.1)
Avaya G650 Media Gateway • TN2312BP IP Server Interface • TN799DP C-LAN Interface • TN2302AP IP Media Processor	- HW07, FW022 HW01, FW016 HW20, FW107
Avaya 4600 Series IP Telephones	2.3 (4610SW) 2.3 (4620SW) 2.3 (4621SW) 2.5 (4625SW)
InfoTalk-Recognizer	8.5
InfoTalk MRCP Server	1.0
Generic PC (Pentium 4, 2.8 GHz, 1 GB RAM)	Windows XP Professional with Service Pack 2

3. Configure Avaya Communication Manager

This section presents the configuration required on Avaya Communication Manager to interface with Avaya IR. This section covers the configuration to support the following:

- Inbound calls are routed to **VDN 14110** that invokes **Vector 110.**
- **Vector 110** queues the incoming call to **Hunt Group 110** with IVR ports.
- IVR ports are configured as **Stations** (10101-10110).
- Stations associated with IVR ports automatically log into the hunt group via **Agent LoginIDs** (11101-11110).

The following configuration is performed via the System Access Terminal (SAT) on Avaya Communication Manager.

Step	Description
1.	Use the **display system-parameters customer-options** 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 **IP_IR_A** has a value greater than or equal to the maximum number of channels configured on Avaya IR.

Step	Description
	display system-parameters customer-options Page 10 of 11 MAXIMUM IP REGISTRATIONS BY PRODUCT ID Product ID Rel. Limit Used IP_API_A : 500 0 IP_API_B : 0 0 IP_API_C : 0 0 IP_Agent : 100 0 **IP_IR_A : 100 10** IP_Phone : 2400 4 IP_ROMax : 2400 0 IP_Soft : 100 0 IP_eCons : 2 0 : 0 0 : 0 0 : 0 0 : 0 0 : 0 0 : 0 0
2.	Use the **add station n** command, where **n** is a valid extension, to configure each IVR port as a station with the **Type** field set to ***H.323***. Specify the **Security Code**, which will be used in Section 4 Step 6 when configuring the phone numbers on IR. Repeat this configuration for each IVR port. In this configuration, 10 IVR ports were configured with an extension range of 10101 to 10110. These stations will be members of **Hunt Group 110** (configured in Step 3) and will automatically log into the split via the **Agent LoginIDs** (configured in Step 4).
	add station 10101 Page 1 of 3 STATION Extension: 10101 Lock Messages? n BCC: 0 **Type: H.323** **Security Code: 10101** TN: 1 Port: IP Coverage Path 1: COR: 1 Name: IR #1 Coverage Path 2: COS: 1 Hunt-to Station: Tests? y STATION OPTIONS Loss Group: 19 Message Waiting Indicator: none Survivable COR: internal SurvivablDTMF over IP: in-band IP Video? n

Step	Description
3.	Enter the **add hunt-group n** command, where **n** is an unused hunt group number. The IVR ports, configured as H.323 stations, will automatically log into the hunt group. Set the **Group Extension** field to a valid extension and set **ACD**, **Queue** and **Vector** to ***y***.

```
add hunt-group 110                                          Page   1 of   3
                                  HUNT GROUP

           Group Number: 110                              ACD? y
             Group Name: IR Skill                       Queue? y
      Group Extension: 13110                          Vector? y
             Group Type: ead-mia
                     TN: 1
                    COR: 1                      MM Early Answer? n
          Security Code:                  Local Agent Preference? n
 ISDN/SIP Caller Display:

            Queue Limit: unlimited
 Calls Warning Threshold:      Port:
  Time Warning Threshold:      Port:
```

On Page 2 of the Hunt Group form, set **Skill** and **AAS** to ***y***. The **AAS** option will allow the IVR ports to automatically log into the hunt group via the **Agent LoginIDs**.

```
add hunt-group 110                                          Page   2 of   3
                                  HUNT GROUP

                    Skill? y      Expected Call Handling Time (sec): 180
                      AAS? y
                 Measured: none
     Supervisor Extension:


      Controlling Adjunct: none

 Timed ACW Interval (sec):


                                      Redirect on No Answer (rings):
                                                  Redirect to VDN:
                   Forced Entry of Stroke Counts or Call Work Codes? n
```

Step	Description
4.	Use the **add agent-loginID n** command, where **n** is a valid extension**,** to add an agent. Add an **Agent LoginID** for each IVR port. Set **AAS** to ***y*** and the **Port Extension** to the corresponding extension of the stations for each IVR port.

```
add agent-loginID 11101                                      Page   1 of   2
                                  AGENT LOGINID

                Login ID: 11101                                 AAS? y
                    Name: IR #1                               AUDIX? n
                      TN: 1                             LWC Reception: spe
                     COR: 1                    LWC Log External Calls? n
           Coverage Path:                   AUDIX Name for Messaging:
           Security Code:
                                         LoginID for ISDN Display? n
                                                   Port Extension: 10101

                                                     Auto Answer: station
                                             MIA Across Skills: system
                                      ACW Agent Considered Idle: system
                                      Aux Work Reason Code Type: system
                                        Logout Reason Code Type: system
                        Maximum time agent in ACW before logout (sec): system

     WARNING:  Agent must log in again before skill changes take effect
```

On Page 2 of the form, set the skill number (**SN**) to the hunt group configured in Step 3 and the skill level (**SL**) to ***1***. Repeat this step for each station configured in Step 2. In this configuration, agent login-IDs 11101 to 11110 were created.

```
add agent-loginID 11101                                      Page   2 of   2
                                  AGENT LOGINID
      Direct Agent Skill:
Call Handling Preference: skill-level              Local Call Preference? n

    SN      SL          SN      SL          SN      SL          SN      SL
 1: 110     1       16:                 31:                 46:
 2:                 17:                 32:                 47:
 3:                 18:                 33:                 48:
 4:                 19:                 34:                 49:
 5:                 20:                 35:                 50:
 6:                 21:                 36:                 51:
 7:                 22:                 37:                 52:
 8:                 23:                 38:                 53:
 9:                 24:                 39:                 54:
10:                 25:                 40:                 55:
11:                 26:                 41:                 56:
12:                 27:                 42:                 57:
13:                 28:                 43:                 58:
14:                 29:                 44:                 59:
15:                 30:                 45:                 60:
```

Step	Description
5.	Use the **add vdn n** command, where **n** is an valid number**,** to create the Vector Directory Number (VDN) that will handle all incoming calls to the Avaya IR. Specify an unused Vector for **Vector Number**.

```
add vdn 14110                                                Page   1 of   3
                            VECTOR DIRECTORY NUMBER

                              Extension: 14110
                                   Name: Queue to IR
                          Vector Number: 110

                    Meet-me Conferencing? n
                      Allow VDN Override? n
                                    COR: 1
                                     TN: 1
                                Measured: none


           VDN of Origin Annc. Extension:
                               1st Skill:
                               2nd Skill:
                               3rd Skill:
```

6.	Use the **change vector n** command, where **n** is the vector number specified in Step 5, to configure the vector. VDN 14110, configured above, will invoke vector 110 which will queue the call to the IVR hunt group via the **queue-to skill** step. A sample configuration for vector 110 is as shown below.

```
change vector 110                                          Page   1 of   3
                                 CALL VECTOR

 Number: 110              Name: Q2 IR
                                          Meet-me Conf? n           Lock? n
  Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 wait-time    0   secs hearing silence
02 queue-to     skill 110  pri m
03 wait-time    30  secs hearing music
04 disconnect   after announcement none
05
```

4. Configure Avaya Interactive Response (IR)

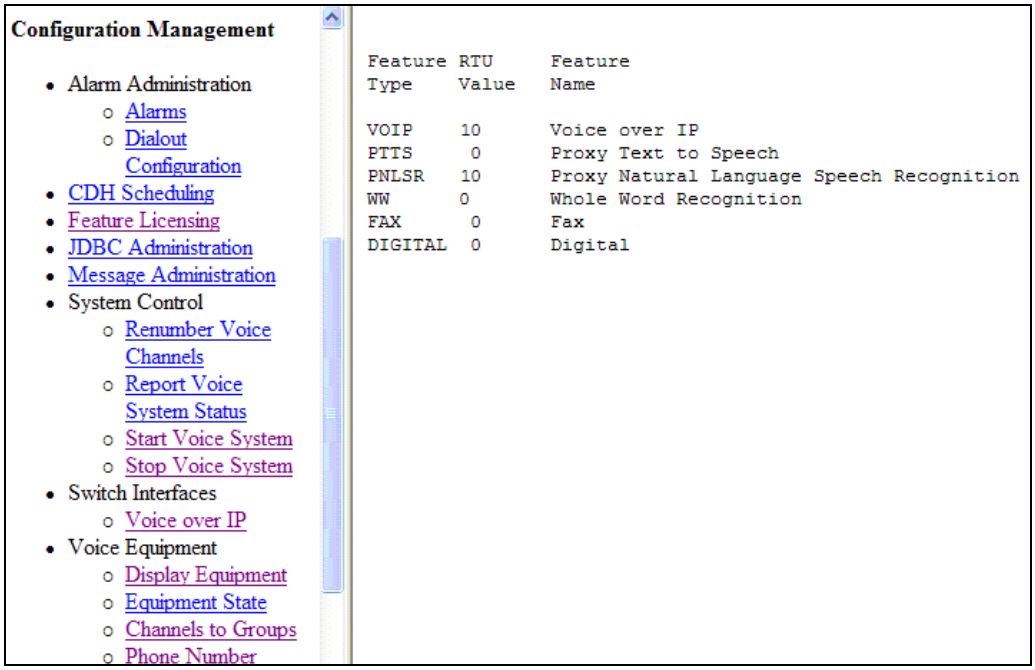
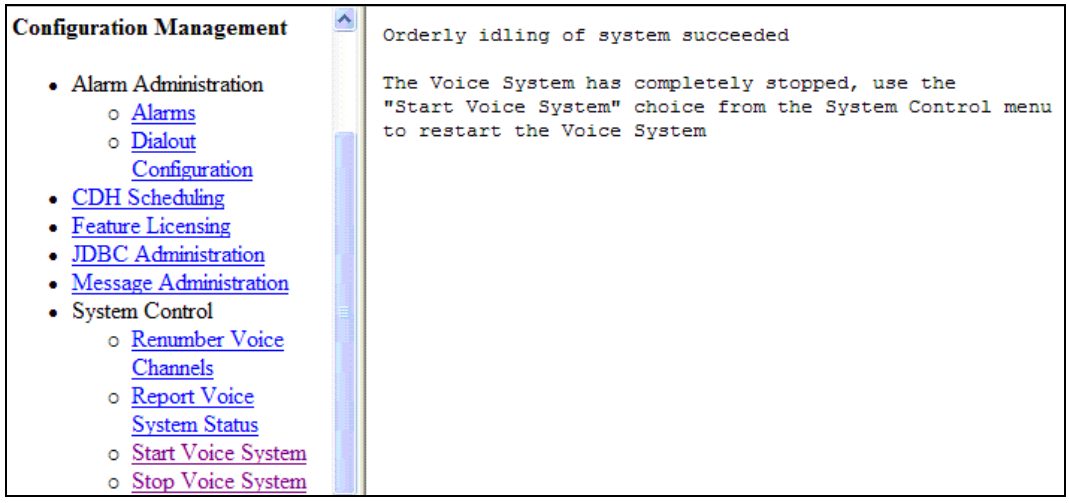
This section covers the configuration of Avaya IR. Avaya Communication Manager routes incoming calls to Avaya IR using Voice over IP (VoIP) over the data network. Each VoIP channel is assigned a VoiceXML application and a phone number that matches a corresponding extension configured on Avaya Communication Manager in Section 3 Step 2 above. Simple VoiceXML applications that use the ASR functionality were developed for this test using a text editor. The configuration steps required on Avaya IR are summarized below.

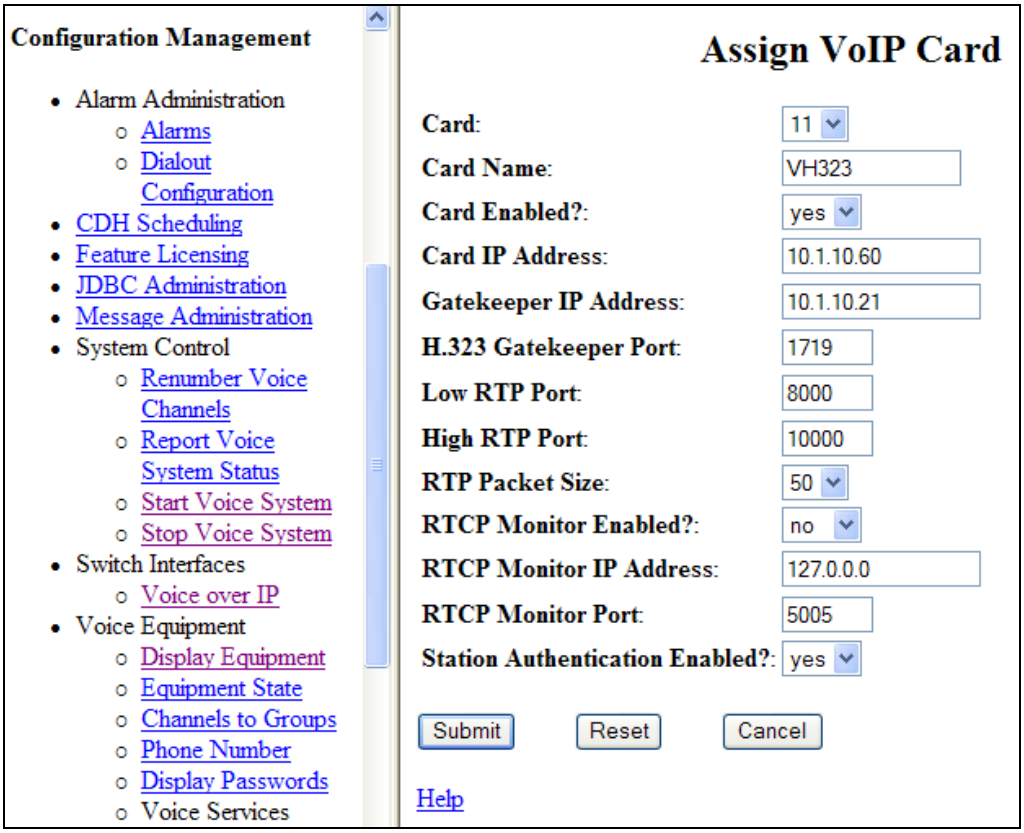
- Access Avaya IR via a web browser and log in.
- Stop the Avaya IR Voice System prior to configuring the VoIP interface.
- Configure the VoIP interface to Avaya Communication Manager.
- Start the Voice System.
- Assign phone numbers to channels.
- Assign services (VoiceXML applications) to channels.
- Administer and assign InfoTalk-Recognizer ASR engine.

Step	Description
1.	The following packages were installed on Avaya IR to support MRCP ASR. • Speech Proxy Base Software (AVsproxy) • Speech Proxy SR - Speech Recognition (AVsrproxy) • MRCP ASR Proxy (AVmrcpasr) To verify the installed packages, run "pkginfo | grep AV" command from Avaya IR's command prompt.

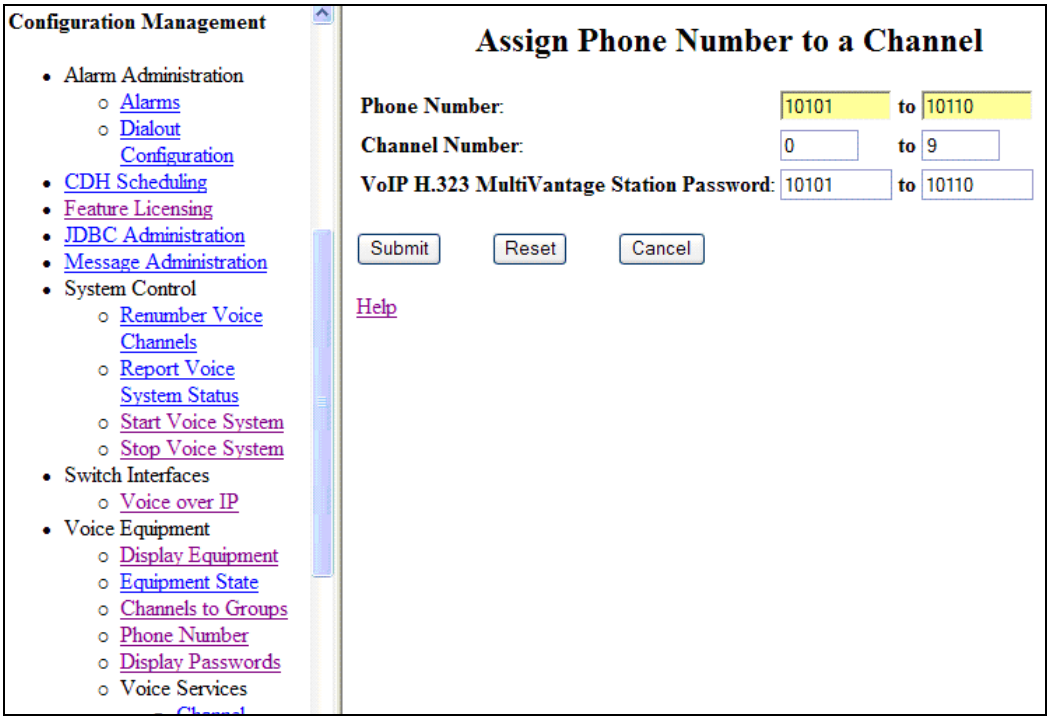
```
ir1(root)# pkginfo | grep AV
IVR         AVbackrst       Backup/Restore Utilities
IVR         AVftst          Feature Test Script Package
IVR         AVir            Interactive Response Base System
IVR         AVjdbcint       JDBC Integration
IVR         AVmigr          Migration Tools
IVR         AVmrcpasr       MRCP ASR Proxy
IVR         AVsc            Service Creation Integration Package Release 5.2
IVR         AVsproxy        Speech Proxy Base Software
IVR         AVsrproxy       Speech Proxy SR - Speech Recognition
IVR         AVtscrtu        License Modification Package
IVR         AVtsm           Transaction State Machine
IVR         AVucid          Universal Call ID
IVR         AVval           Avaya IR System Validation Package
IVR         AVvoicxml       Voice XML Interpreter
IVR         AVvoip          Voice Over IP
IVR         AVwebadm        Web Administration
IVR         AVxfer          Call Transfer and Bridge Package
```

Step	Description
2.	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 web page is displayed. Click **Web Administration** to display the login screen shown below, and log in to Avaya IR with the proper login and password credentials. Select **Login** to continue. 

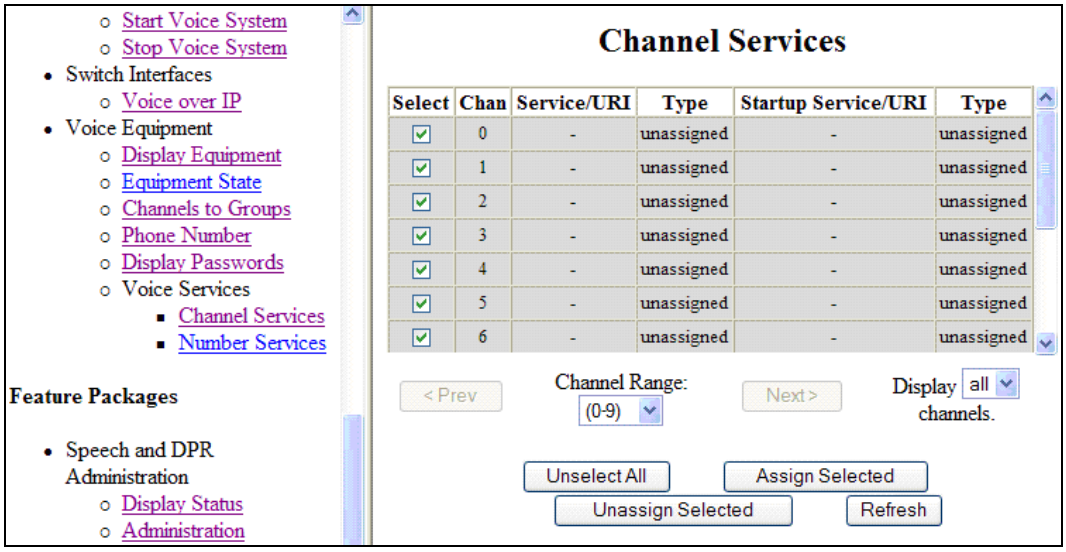
Step	Description
3.	After successfully logging into Avaya IR, the main Avaya IR configuration web page is displayed. Click **Feature Licensing** to display the Feature License page. Verify that the **Right-To-Use (RTU) Value** for the **Feature Type *VOIP*** is set to the number of VOIP channels used and ***PNLSR*** is set to an appropriate value to support the number of ASR channels. 
4.	Click **Stop Voice System** to stop the Voice System so that the VoIP interface can be configured. When the **Stop Voice System** page is displayed, click **Submit** and wait until the system displays a message at the bottom of the page indicating that the Voice System has completely stopped. 

Step	Description
5.	To configure the VoIP interface to Avaya Communication Manager, follow these steps: a. Under **Switch Interfaces** in the left pane, click **Voice over IP** to display the **Voice over IP** page. b. Click **Assign Card** to display the **Assign VoIP Card** page. c. Set **Card IP Address** to the IP address of the NIC card on IR used for VoIP, **Gatekeeper IP Address** to the IP address of the CLAN board on Avaya Communication Manager and **Station Authentication Enabled** to ***yes***. d. Click **Submit**.  After the VoIP card is successfully configured, start the Voice System by clicking on **Start Voice System.** When the **Start Voice System** page is displayed, click **Submit** and wait until the system displays a message at the bottom of the page indicating that the startup of the Voice System is complete.

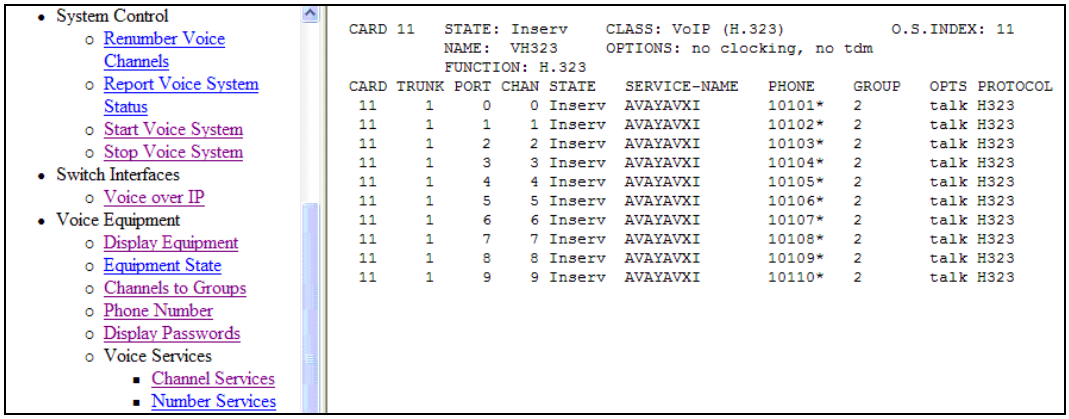
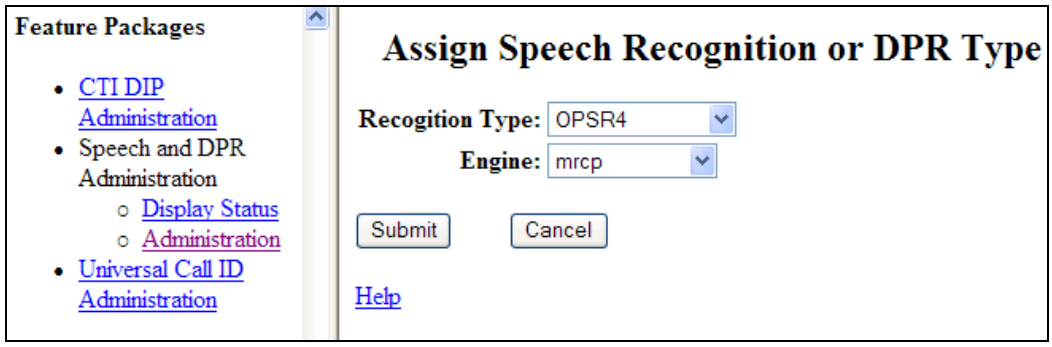
Step	Description
6.	To assign phone numbers to channels, click **Phone Number** to display the **Phone Number - Channel Assignment** page and click **Assign**. On the **Assign Phone Number to a Channel** page, set **Phone Number** to ***10101 to 10110***, **Channel Number** to ***0 to 9***, **VoIP H.323 MultiVantage Station Password** to ***10101 to 10110*** and click **Submit**. The **Phone Number** and **VoIP H.323 MultiVantage Station Password** fields must match the stations created in Section 3 Step 2.

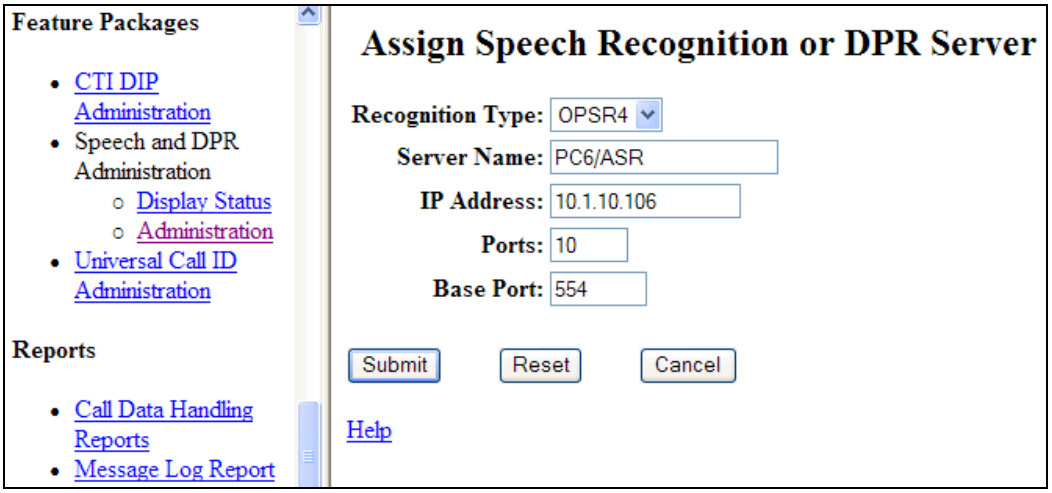


Step	Description
7.	Assign a VoiceXML application to each channel. This specifies which VoiceXML application a particular IVR channel should run when it receives a call. Click **Channel Services** to display the **Channel Services** page. Click the drop-down menu beside **Display** and select ***all*** so as to display all channels. Click **Select All** and click **Assign Selected**.



On the **Assign Services to Channels** page that appears, select ***VXML URI*** for **Assign** and enter the **URI** of the VoiceXML application. In this configuration, the VoiceXML files are stored in the '/vs/data/vxml/' directory. Select **Submit**.

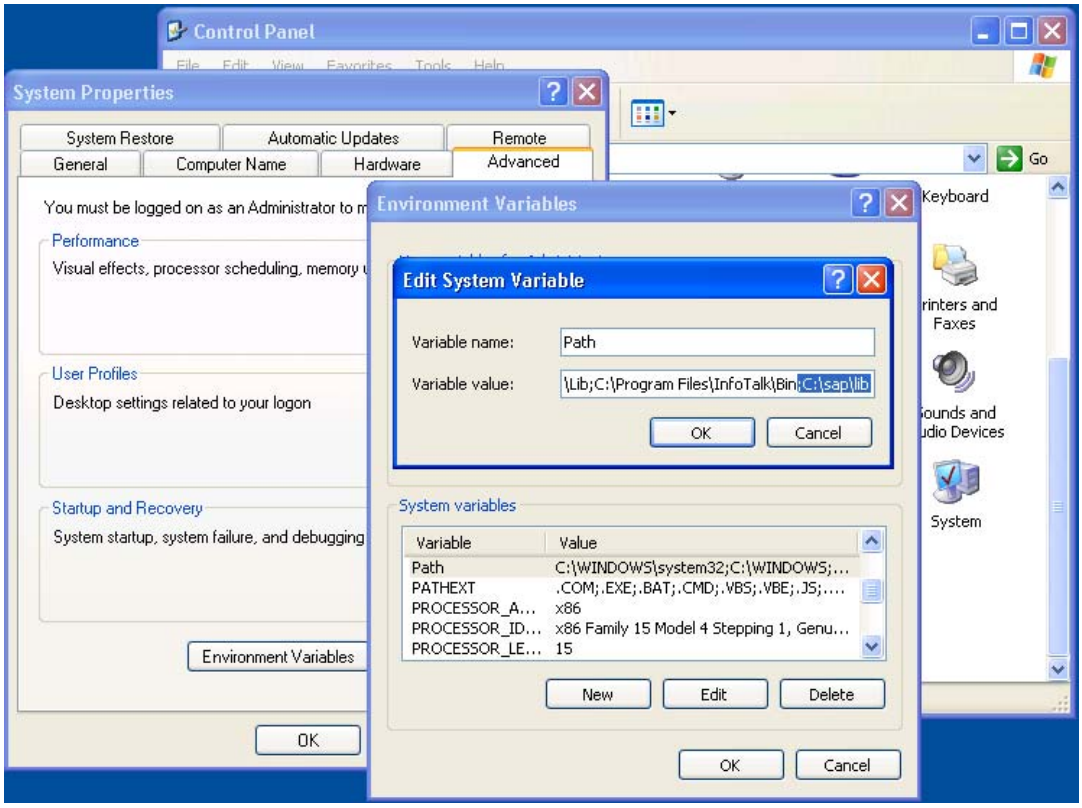
Step	Description
8.	To view the status of the channels and the configuration details, select **Display Equipment** from the left pane. Verify that the **STATE** for each channel is ***Inserv***.  • System Control ○ Renumber Voice Channels ○ Report Voice System Status ○ Start Voice System ○ Stop Voice System • Switch Interfaces ○ Voice over IP • Voice Equipment ○ Display Equipment ○ Equipment State ○ Channels to Groups ○ Phone Number ○ Display Passwords ○ Voice Services ▪ Channel Services ▪ Number Services CARD 11 STATE: Inserv CLASS: VoIP (H.323) O.S.INDEX: 11 NAME: VH323 OPTIONS: no clocking, no tdm FUNCTION: H.323 CARD TRUNK PORT CHAN STATE SERVICE-NAME PHONE GROUP OPTS PROTOCOL 11 1 0 0 Inserv AVAYAVXI 10101* 2 talk H323 11 1 1 1 Inserv AVAYAVXI 10102* 2 talk H323 11 1 2 2 Inserv AVAYAVXI 10103* 2 talk H323 11 1 3 3 Inserv AVAYAVXI 10104* 2 talk H323 11 1 4 4 Inserv AVAYAVXI 10105* 2 talk H323 11 1 5 5 Inserv AVAYAVXI 10106* 2 talk H323 11 1 6 6 Inserv AVAYAVXI 10107* 2 talk H323 11 1 7 7 Inserv AVAYAVXI 10108* 2 talk H323 11 1 8 8 Inserv AVAYAVXI 10109* 2 talk H323 11 1 9 9 Inserv AVAYAVXI 10110* 2 talk H323
9.	Configure Avaya IR to use the Server installed with InfoTalk-Recognizer 8.5 as an Advanced Speech Recognition (ASR) Server. To assign a speech recognition type: a. Click on **Speech and DPR Administration → Administration**. b. Select **Speech Recognition and DPR Configuration**. The system displays the Speech Recognition and DPR Configuration screen. c. Select **Assign New Recognition Type**. The system displays the Assign Speech Recognition or DPR Type screen. d. In the **Recognition Type** field, select the speech recognition type (OPSR4 through OPSR9) that you want to assign. In this configuration, OPSR4 is selected. e. In the **Engine** field, select **mrcp**. Select **Submit**. The system displays information about the success or failure of the administration attempt.  **Feature Packages** • CTI DIP Administration • Speech and DPR Administration ○ Display Status ○ Administration • Universal Call ID Administration **Assign Speech Recognition or DPR Type** **Recogition Type:** OPSR4 **Engine:** mrcp Submit Cancel Help

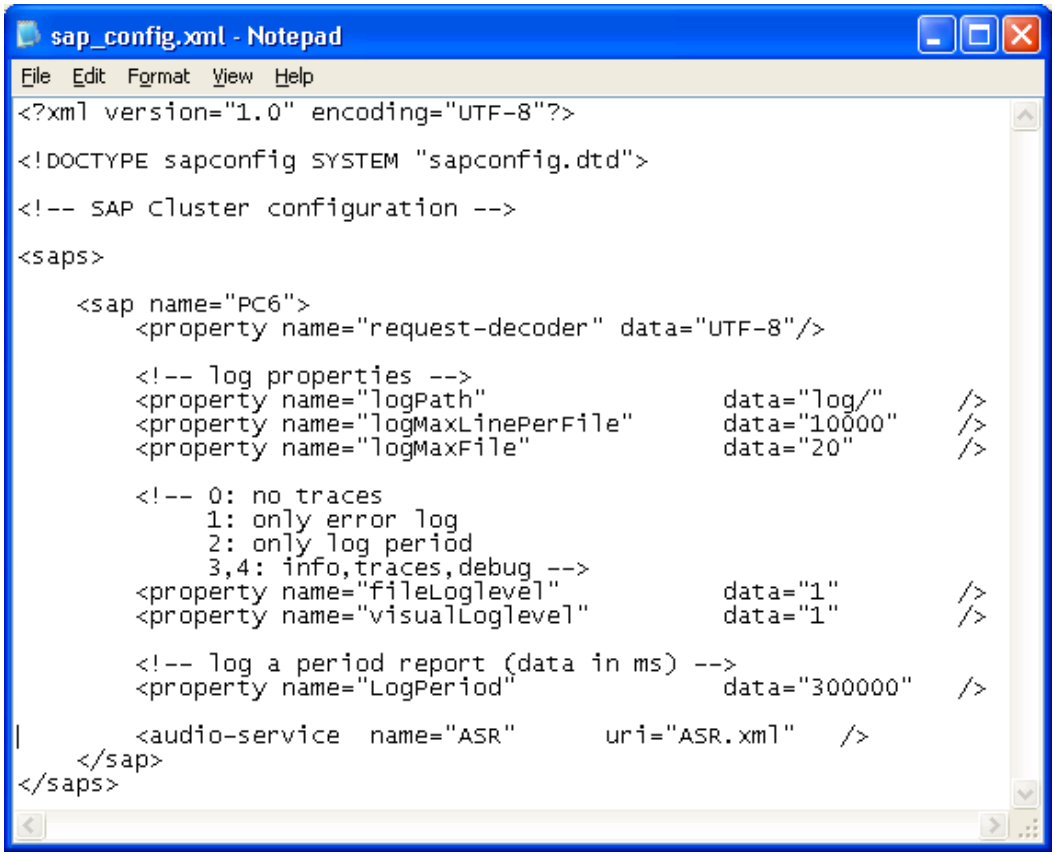
Step	Description
	To assign a speech server: a. Click on **Speech and DPR Administration → Administration**. b. Select **Speech Recognition and DPR Configuration**. The system displays the Speech Recognition and DPR Configuration screen. c. Select **Assign New Server**. The system displays the Assign Speech Recognition or DPR Server screen. d. In the **Recognition Type** field, select the recognition type assigned previously (OPSR4). In the **Server Name** field, enter **PC6/ASR**. This name must match the ASR URL of the InfoTalk-Recognizer server as configured in Section 5 Step 3. Avaya IR will construct the ASR URL as **rtsp://PC6:554/ASR** when accessing the InfoTalk-Recognizer server. e. In the **IP Address** field, enter the IP Address of the speech server. f. In the **Ports** field, enter the number of ports to be used. The number must be less than or equal to the number of ***PNLSR*** licensed ports on the Avaya IR. g. In the **Base Port** field, enter ***554***. The Base Port setting must match the InfoTalk MRCP Server setting in Section 5 Step 6. h. Select **Submit**. The system displays information about the success or failure of the administration attempt. To complete the MRCP ASR configuration, **stop** and **start** the voice system as shown in Section 4 Step 4 and 5 previously. 

5. Configure InfoTalk-Recognizer and InfoTalk MRCP Server

InfoTalk-Recognizer and InfoTalk MRCP Server were installed on a Generic Pentium 4, 2.8 GHz server with 1 GB of memory running Microsoft Windows XP Professional with Service Pack 2. As all communication between the InfoTalk server and Avaya IR is via TCP/IP, it is strongly suggested that both systems be placed on the same IP subnet with minimal network traffic in order to minimize network latency.

Step	Description
	Installing InfoTalk-Recognizer 8.5 software
1.	The InfoTalk-Recognizer 8.5 software is distributed on a CD-ROM. To install, place the CD-ROM into the drive and run the file **Setup.exe.** The installation runs through the following steps: a. A welcome window will be displayed. Click **Next** to continue. b. Read and accept the license agreement and click **Next**. c. Select ***Complete*** for **Setup Type** and click **Next**. d. Select the destination folder and click **Next**. The default installation path is **C:\Program Files\InfoTalk**. e. Check the option **Install JRE after Installation?** and click **Install**. f. The installation wizard will install the product. g. At the end of installation process click on the "**Finish**" button. h. Restart the server after the installation. i. After the server has restarted, register the InfoTalk-Recognizer License using the instructions found in *InfoTalk-Recognizer Installation And User Guide* [5].
	Installing InfoTalk MRCP Server 1.0 software
2.	a. Download JRE 1.4.2_09 or above from Sun http://java.sun.com/ and install it if JRE 1.4 is not installed in Step 1. b. Insert the CD-ROM containing InfoTalk MRCP Server 1.0 software into the drive and run **InstallSAP.exe**. The default installation path is **C:\sap**. c. To add the path **C:\sap\lib** to the System environment variable **PATH**, double-click **System** from **Control Panel**. Click **Advanced** tab and **Environment Variables**. Under **System variables**, select **Path** and click **Edit**. Add **;C:\sap\lib** to the end of **Variable value** field. Click **Ok** three times to exit the windows.

Step	Description
	
	Configuring InfoTalk MRCP Server 1.0 software
3.	Modify the file **sap_config.xml** found at C:\SAP\Config. a. Locate the line as shown below and change **mrcp_server_name** to the Computer Name of the system. In this setup, the Computer Name is **PC6**. <sap name="PC6"> b. Locate the lines as shown below. The ASR URL configured on the InfoTalk-Recognizer server is **rtsp://PC6:554/ASR** <audio-service name="ASR" uri="ASR.xml" /> c. Locate the line as shown below. This property sets the encoding of the requests. The **data** field should be set to the default value **"UTF-8"** in order to support double-byte languages. If Avaya IR is configured to send requests in another encoding such as ISO-8859-1, change the **data** field value accordingly. To determine the encoding used by Avaya IR, locate the **encoding** attribute in the **<xml>** tag in the VoiceXML application file. <property name="request-decoder" data="UTF-8"/>

Step	Description
	A sample configuration of **sap_config.xml** used in this setup is shown below. 
4.	Modify the file **sap.properties** found at C:\SAP\Config. a. The line shown below determines the location of the configuration file for the InfoTalk-Recognizer ASR engine. sap.InfoTalk.asr.configFile = ./config/InfoTalkASR.cfg b. The line below determines the maximum instances of the ASR engine. The value must correspond to the number of licenses purchased for InfoTalk-Recognizer. sap.InfoTalk.asr.maxInstance = 10

Step	Description
5.	Modify the file **InfoTalkASR.cfg** found at C:\SAP\Config. a. Locate lines shown below. The variable **client_server** should be set to 0. The MRCP Server loads the ASR engine internally as both software packages are installed on the same server. [rec-client] client_server = 0
6.	Modify **ASR.xml** found at C:\SAP\Config. a. Locate the line as shown below. This property sets the port number that the InfoTalk MRCP Server listens for the connection of MRCP client. It has to match with the settings in Section 4 Step 9 "Configure Avaya Interactive Response (IR)". <property name="tcpport"> 554 </property>

5. Interoperability Compliance Testing

This Interoperability Compliance Test included feature functionality and serviceability testing. Feature functionality tests were used to verify that InfoTalk-Recognizer and InfoTalk MRCP Server could successfully work with the Avaya IR for the purpose of Advanced Speech Recognition (ASR) in Voice XML applications. This test was performed under the following conditions:

- Used Voice XML scripts in English, Cantonese (Traditional Chinese) and Putonghua (Simplified Chinese)
- Verified the conditions where no user input, unsuccessful recognition and successful recognition were correctly handled by the Voice XML application
- Used a small size grammar (6-digit sequence, country names, season of the year) for speech recognition
- Used three different callers, internal VOIP calls and external calls over the PSTN to validate the ASR accuracy

Serviceability tests were used to verify that the InfoTalk Server recovered from adverse conditions, such as rebooting of the InfoTalk server, Avaya IR, and Avaya Communication Manager and disconnecting the ethernet cable to the InfoTalk server.

5.1. General Test Approach

All feature functionality test cases were performed manually to verify proper operation. The general test approach included:

- Verifying ASR Feature Functionality between Avaya IR, InfoTalk-Recognizer and InfoTalk MRCP Server
- Speech input from the caller was recognized correctly
- The Barge-in feature worked when the caller spoke before the system finished prompting
- Six callers could perform ASR functions simultaneously
- Speech in English, Cantonese and Putonghua was recognized correctly

5.2. Test Results

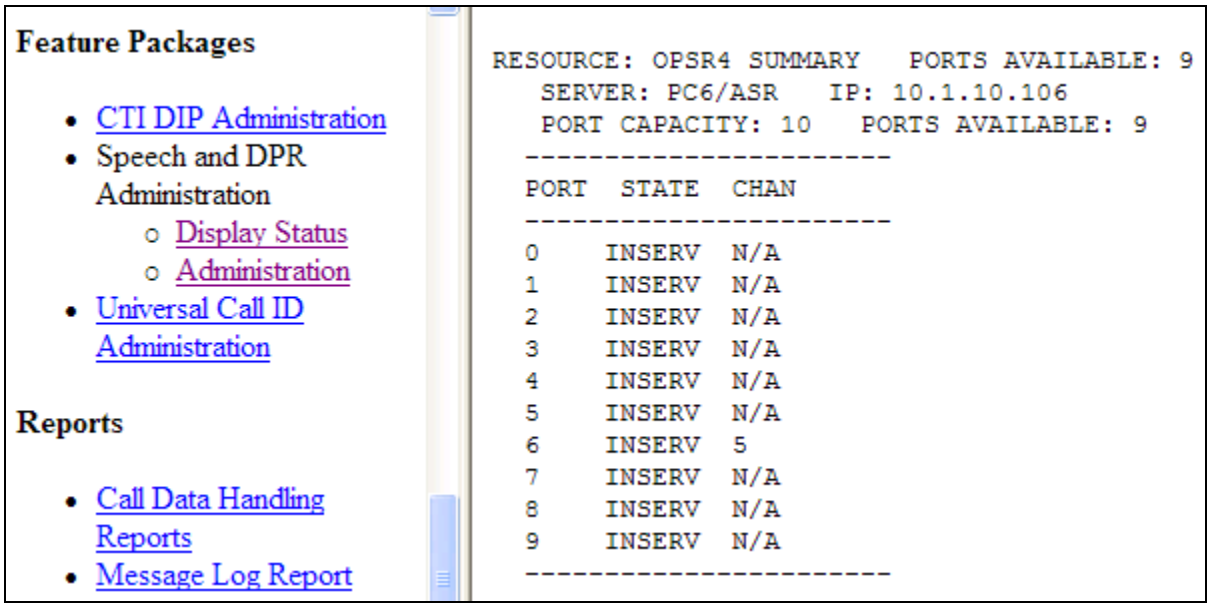
All feature functionality and serviceability test cases passed. InfoTalk-Recognizer successfully communicated with Avaya IR using VoiceXML applications through the MRCP V1 protocol. For serviceability testing, InfoTalk Server was able to recover after resets of the InfoTalk Server, Avaya IR and Avaya Communication Manager. The InfoTalk Server was also able to recover from network disconnects and reconnects.

6. Verification Steps

The status of the connectivity between the InfoTalk Server and Avaya IR can be obtained by viewing the Speech Resource Status Window in Avaya IR (**Web Administration → Speech and DPR Administration → Display Status → Speech Resource Status**).

Select the **Resource Type** that was configured for ASR and click **Submit**.

Verify that the **STATE** of the ports show **INSERV**. When ASR resources are being requested by the Avaya IR, the **CHAN** field will be populated with the corresponding IR channel.



7. Support

For technical support on InfoTalk-Recognizer and MRCP Server contact:

Telephone : +65 6890-5967
Fax : +65 6895-4110
Email : Chunlei.pan@infotalkcorp.com

8. Conclusion

These Application Notes describe the compliance-tested configuration used to validate InfoTalk-Recognizer 8.5 and InfoTalk MRCP Server 1.0 with Avaya Communication Manager 3.0.1 and Avaya Interactive Response 1.3. All test cases were completed successfully.

9. Additional References

This section references the product documentations that are relevant to these Application Notes.

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

[1] *Avaya Interactive Response Online Documentation.*
[2] *Administrator's Guide for Avaya Communication Manager*, Issue 1, June 2005, Document ID 03-300509.
[3] *Avaya Communication Manager Release 3.0 Call Center Software Automatic Call Distribution (ACD) Guide*, Issue 1, June 2005, Document ID 07-300301.
[4] *Avaya Interactive Response Release 1.2.1 MRCP Installation and Reference Guide*, Issue 1.0, November 2004, Document ID 107222.

The following documents are available from the InfoTalk-Recognizer CDROM:

[5] *InfoTalk-Recognizer Installation And User Guide*

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at devconnect@avaya.com.