



Application Notes for InfoTalk-Recognizer with Avaya Interactive Response - Issue 1.0

Abstract

The InfoTalk-Recognizer is a conversational speech recognition engine that is capable of understanding multiple and mixed languages commonly used in Asia Pacific. This product provides capabilities for building powerful voice-enabled business solutions.

The InfoTalk-Recognizer 8 has successfully completed testing against the Avaya Interactive Response R1.2.1. The testing validated InfoTalk's implementation of Avaya's NLSR Client/Server protocol used for integrating the Avaya IR with Automatic Speech Recognition servers. Instructions for configuring these two systems are presented in these Application Notes.

Information in these Application Notes has been obtained through compliance testing and technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Labs facility in the Avaya Singapore Pte Ltd offices.

1. Introduction

The InfoTalk-Recognizer R8 (Recognizer) has successfully completed testing against the Avaya Interactive Response R1.2.1 (IR). The testing validated InfoTalk's implementation of Avaya's NLSR Client/Server protocol used for integrating the IR with third party Automatic Speech Recognition servers. Instructions for configuring these two systems are presented in these Application Notes. Information in these Application Notes has been obtained through compliance testing and technical discussions. Testing was conducted via the DeveloperConnection Program at the Avaya Labs facility in the Avaya Singapore Pte Ltd offices.

For the testing Avaya provided the IR server configured with the necessary NLSR protocol software and two application scripts that facilitated the testing of the Recognizer integration. Avaya also supplied an Avaya Ethernet Switch for the LAN and the telephony environment via an Avaya S8700 Media Server. InfoTalk provided the Recognizer, which was pre-configured with a simple grammar set to support the testing. The test effort focused on verifying that the IR and Recognizer could be successfully integrated, the administrative steps required on each server to configure the integration, and the accurate implementation of the client/server protocol. All test cases completed successfully.

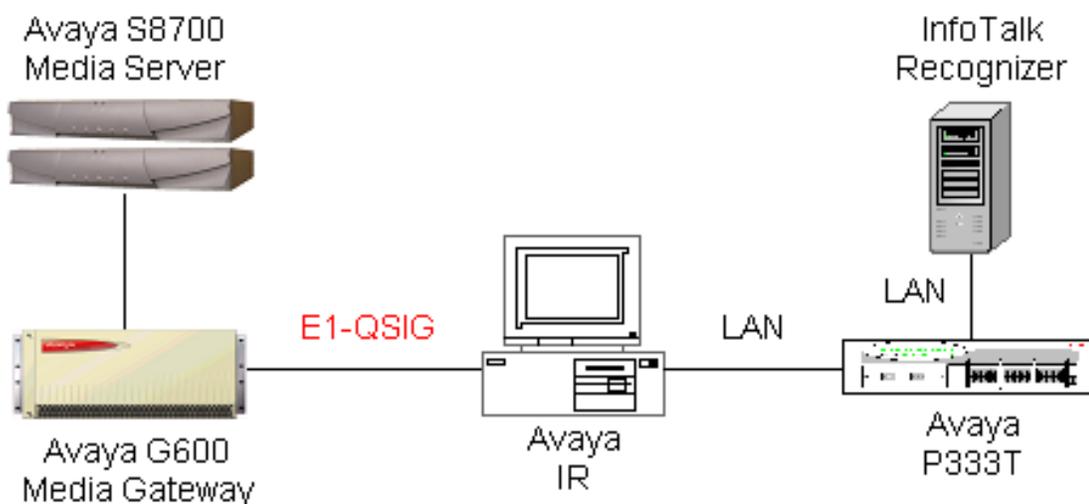


Figure 1: Network Configuration

2. Equipment and Software Validated

The configurations of the IR and Recognizer used in the integration testing are as specified below. Note that actual customer configurations may use different hardware, depending on the system loading requirements. The Avaya IR configuration, presented below, should be viewed as minimum requirements. The Recognizer server configuration is provided for reference only. Please consult InfoTalk for minimum Recognizer sizing requirements.

2.1 Hardware Configuration

The IR ran on a Sun Blade 150. The Sun Blade was equipped as follows:

- UltraSPARC-Iii 650 MHz Processor
- NMS AG4000 E1 telephony card (the implemented PBX integration for this testing. (Alternately an H.323 link could have been used.)

The Recognizer ran on a Windows based server equipped as follows:

- Intel Pentium III 1 GHz Processor
- 1.0G DDR SDRAM
- 28G IDE Hard Disk Drive

2.2 Software Configuration

The IR was configured with the R1.2.1 version of its software with the following packages:

- AVbackrst – Backup/Restore Utilities
- AVfst – Feature Test Script Package
- AVir – Interactive Response Base System
- AVjdbcint – JDBC Integration
- AVnms – NMS Package
- AVsc – Service Creation Integration Package
- AVsproxy – Speech Proxy Base Software
- AVsrproxy – Speech Proxy SR – Speech Recognition
- AVtsertu – License Modification Package
- AVtsm – Transaction State Machine
- AVvoicxml – Voice XML Interpreter
- AVwebadm – Web Administration

The Recognizer R8 was configured with the following software packages:

- NLSR server package
- InfoTalk-Recognizer 8 standard package with Singapore speech model
- Microsoft Windows 2000 Server with Service Pack 4

3. Configuration of the IR

To configure the IR to support the InfoTalk Recognizer the following steps must be implemented. The screen shots shown are from an IR R1.2.1 server. Screens used in other releases may vary but the administrative process will be very similar.

- 1) If not already on the IR, install the software packages AVsproxy and Avsrproxy.
- 2) Configure the Recognition Type and Server.

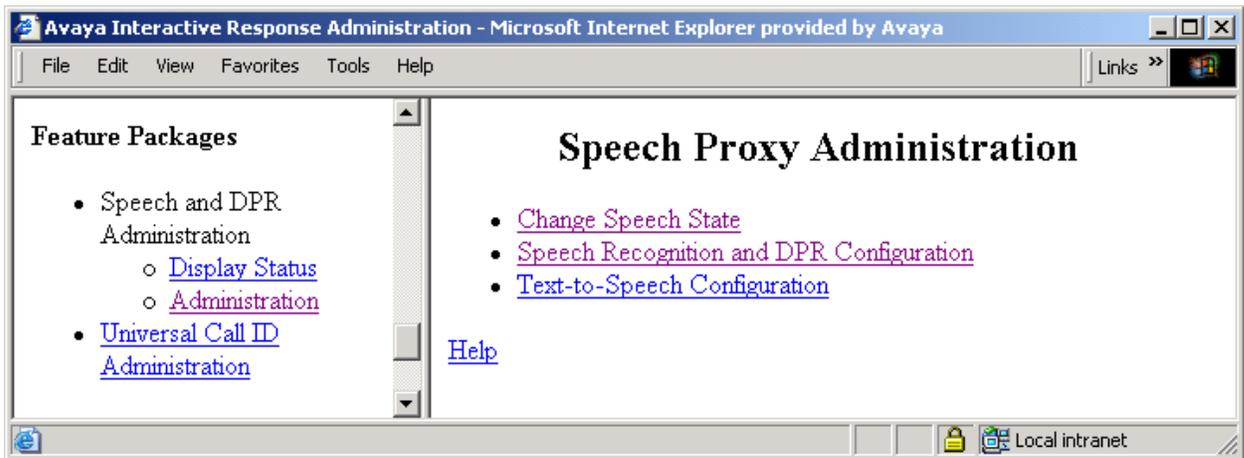


Figure 2: Speech Proxy Administration

- Select the **Administration** link, under Feature Packages in the left panel.
- Select the **Speech Recognition and DPR Configuration** link in the right panel.



Figure 3: Speech Recognition and DPR Configuration

- Select **Assign New Recognition Type** button



Figure 4: Assign Speech Recognition or DPR Type

- Select **OPSR4** as the Recognition Type.
- Select **other** as the Engine.
 - Note, if the ‘other’ option is not listed then you must update the file /vs/sproxy/cfg/speech.props as follows:

Change the OSR_Engines property in the speech.props file to add the ‘other’ engine type. To do this add ‘|other’ to the end of the OPSR_Engines property line. After the edit the line should look like this:

OSR_Engines=nuance|speechworks|other

- Select the **Submit** button

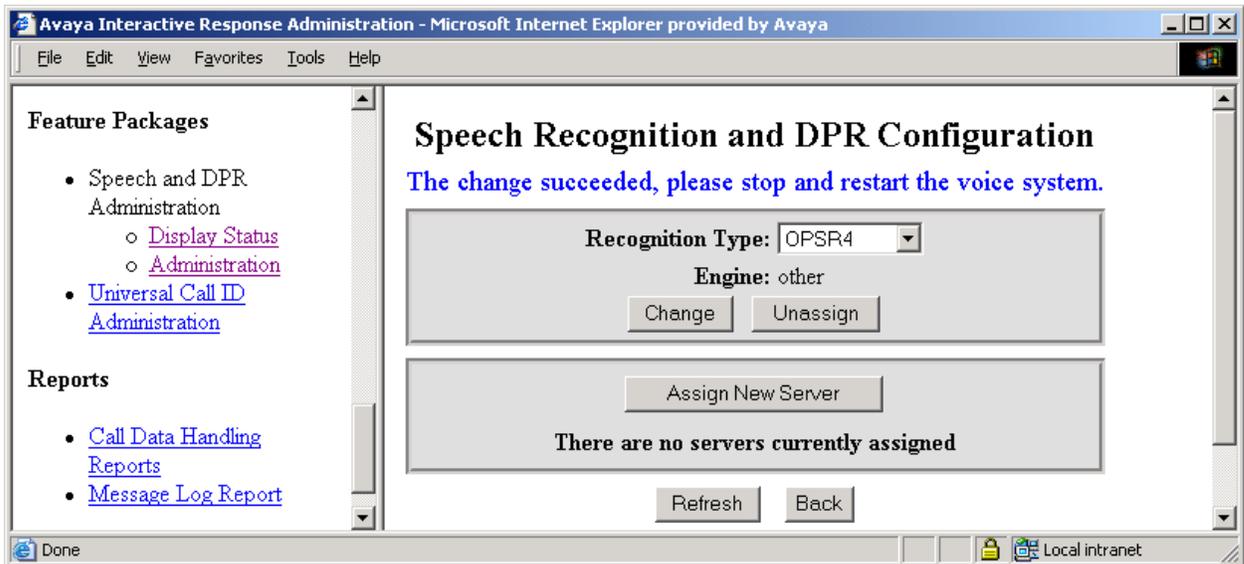


Figure 5: Speech Recognition and DPR Configuration

- Select the **Assign New Server** button.

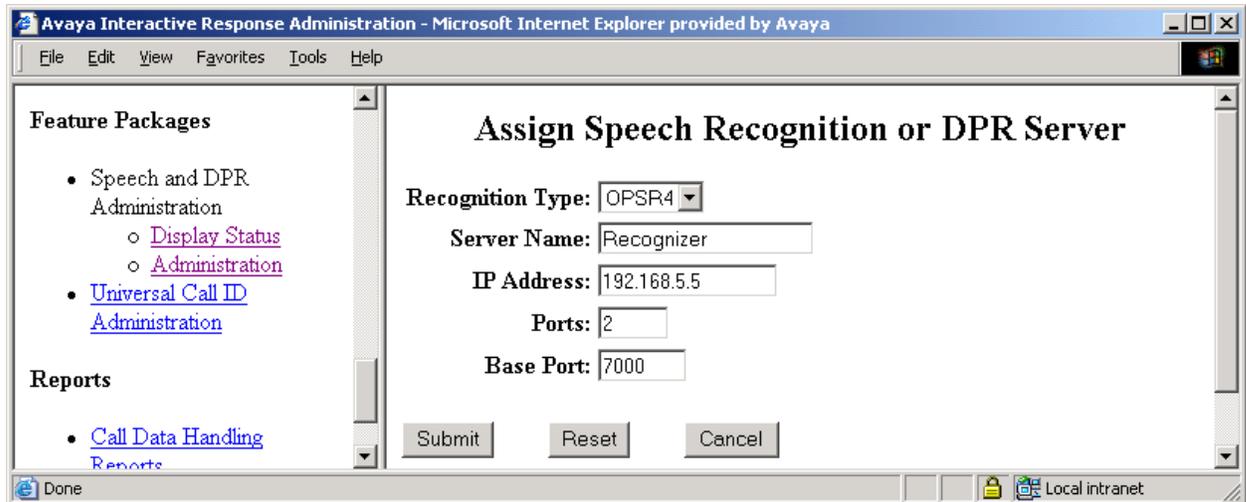


Figure 6: Assign Speech Recognition or DPR Server

- Give the server a name by which the IR will refer to the Recognizer, in logs.
- Enter this Recognizer's assigned static IP address (e.g. 192.168.5.5).
- Specify the number of ASR ports that this Recognizer will support.
- Specify the Base Port that this Recognizer will use, note this must fall in the range of 1024-65000.
- Select the **Submit** button.

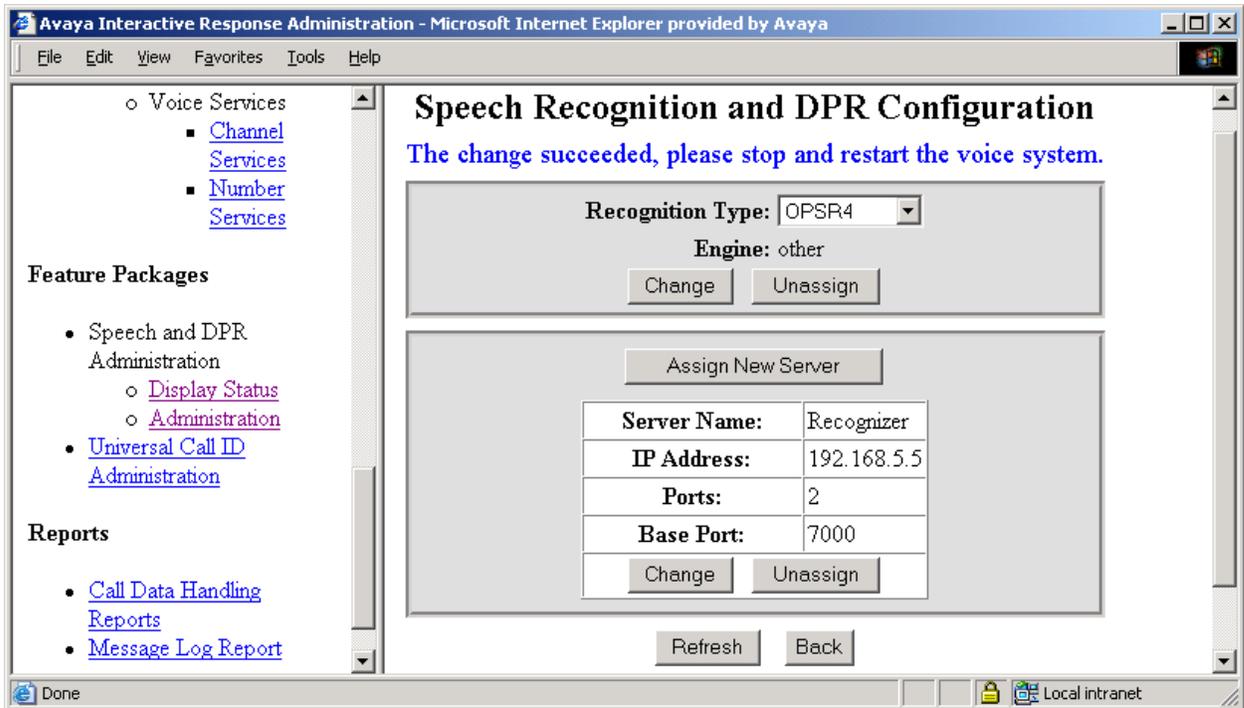


Figure 7: Speech Recognition and DPR Configuration

- Stop and restart the IR to implement the changes.

3) Bring the ASR server into service:

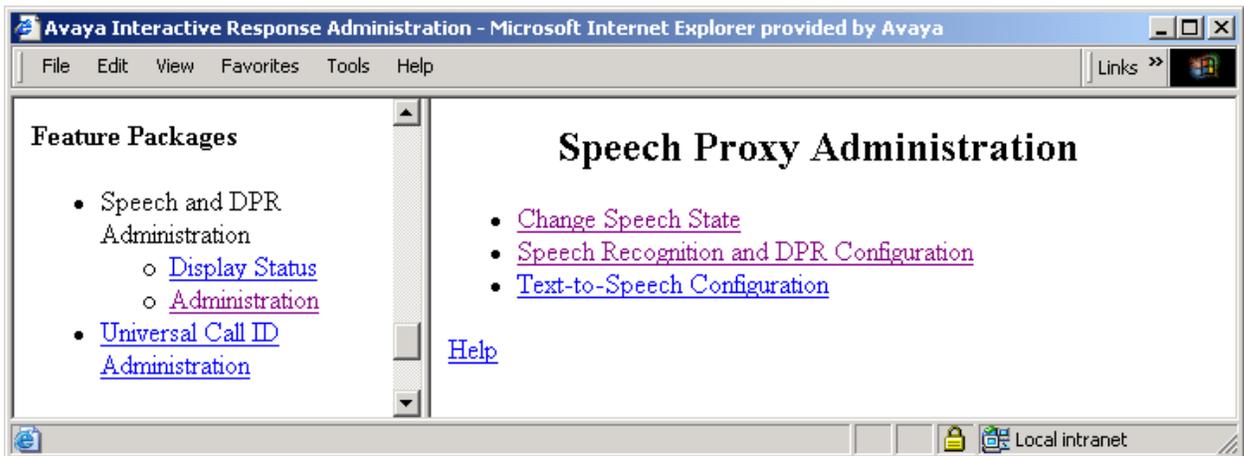


Figure 8: Speech Proxy Administration

- Select the **Administration** link from the Feature Packages options in the left panel.
- Select **Change Speech State** from the right panel.

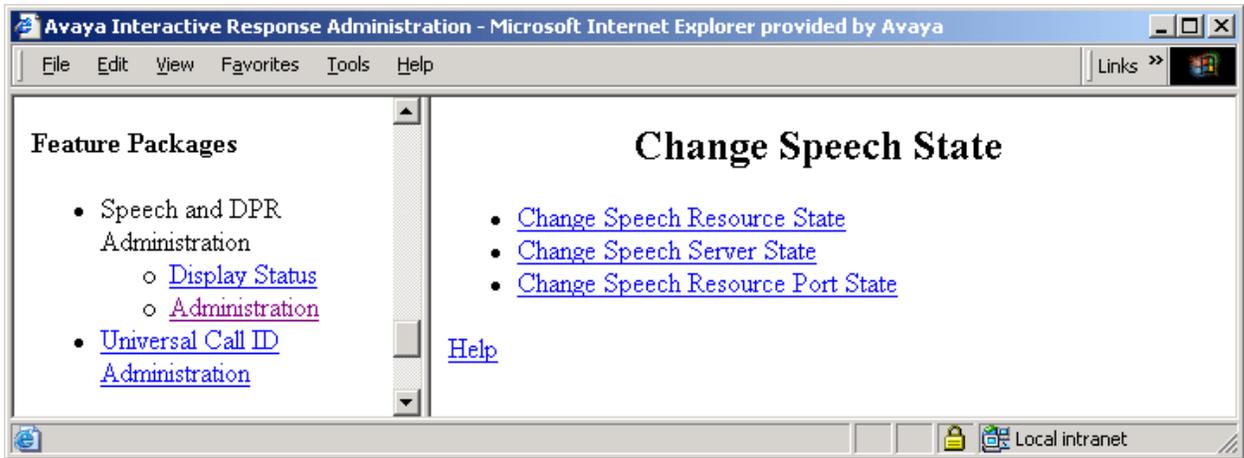


Figure 9: Change Speech State

- Select **Change Speech Resource State** to change state of all speech resources of a specific type, for example OPSR4.

As an alternative:

- Select **Change Speech Server State** to change the state of a specific speech server.
- Select **Change Speech Resource Port State** to change the state of specific speech ports.



Figure 10: Change Speech Resource State

- Select **OPSR4** as the Resource Type
- Select the **Submit** Button

4) Check Speech Resource Status:

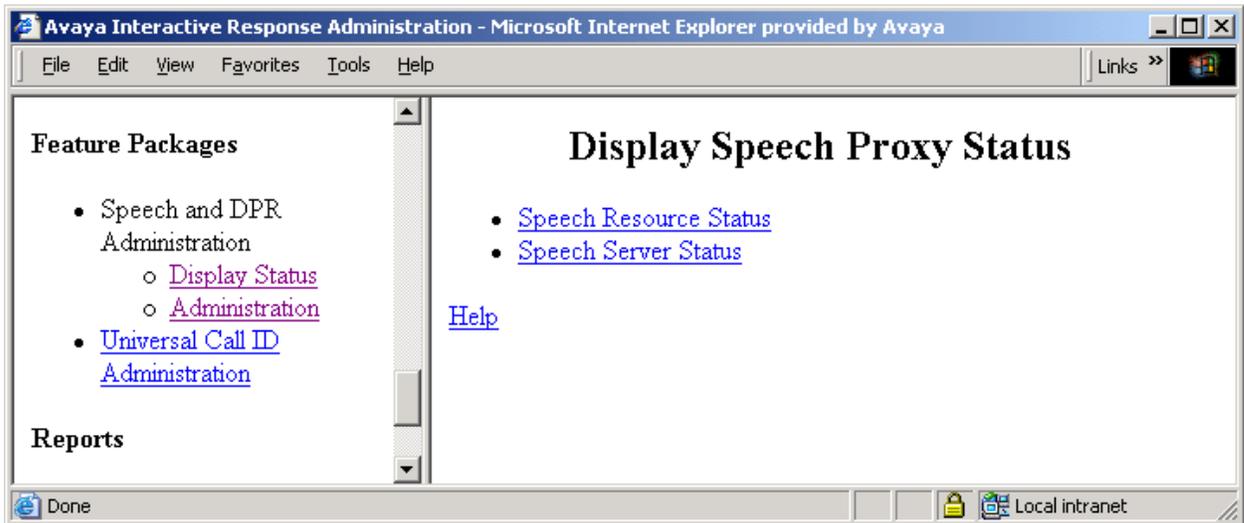


Figure 11: Display Speech Proxy Status

- Select either **Speech Resource Status** to see the status of all the speech resource ports, select **Speech Server Status**, to see the status of ports associated with a specific speech server.

As an alternative:

- Select **Display Status** from the Feature Packages options in the left hand window.

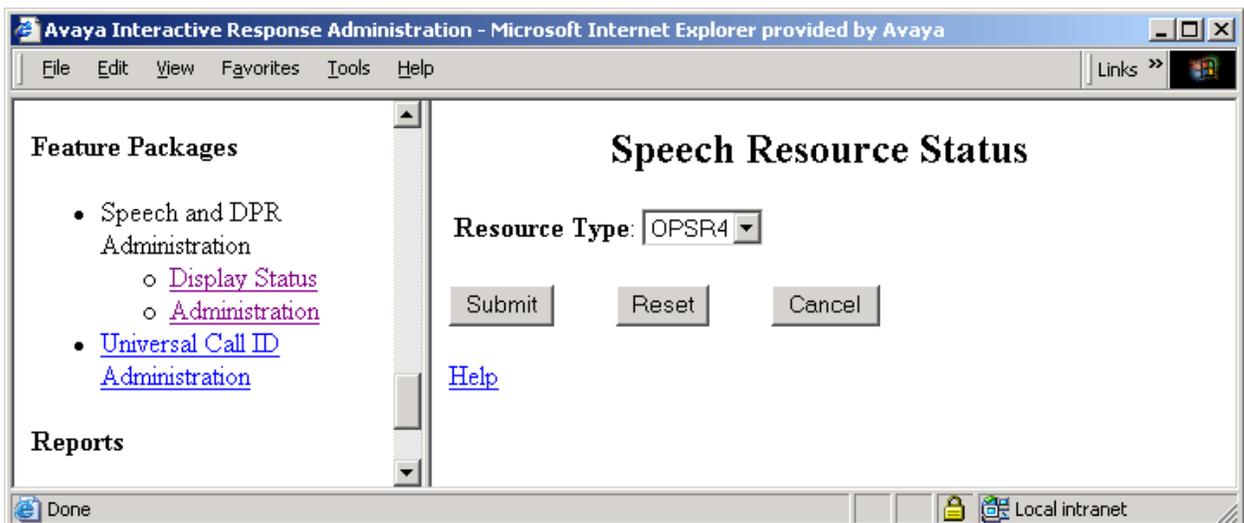


Figure 12: Speech Resource Status

- Select the Resource Type.
- Select the **Submit** button.

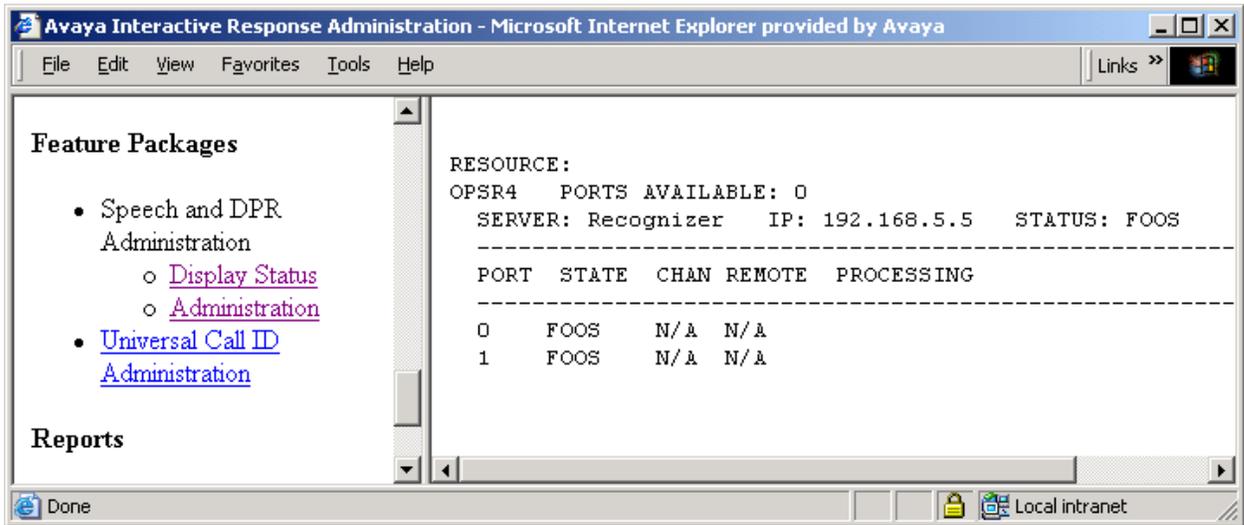


Figure 13: Speech Resource Status Output

- The Resource Status screen indicates the number of ports that are available as well as the status of all ports configured on the system. (The InfoTalk server was not connected at the time these screen prints were taken. Had the InfoTalk server been connected the OPSR4 PORTS AVAILABLE: would have been 2, the SERVER. STATUS: would have read 'INSERV' and the STATE of the ports would also have read 'INSERV'.)

4. Configure the Recognizer

InfoTalk-Recognizer communicates with Avaya IR via InfoTalk-NLSRService software running on the ASR server. InfoTalk-NLSRService is an interface middleware that interprets Avaya's proprietary NLSR Protocol messages into native InfoTalk-Recognizer function calls for processing by InfoTalk-Recognizer ASR engine. InfoTalk-NLSRService also interprets return status and results from InfoTalk-Recognizer and sends the corresponding NLSR Protocol status and result messages back to Avaya IR via the same Avaya NLSR Protocol. The Avaya IR has the Client role for all communication involving Avaya's NLSR Client/Server protocol and an ASR Server. The following figure shows the system architecture between various software components:

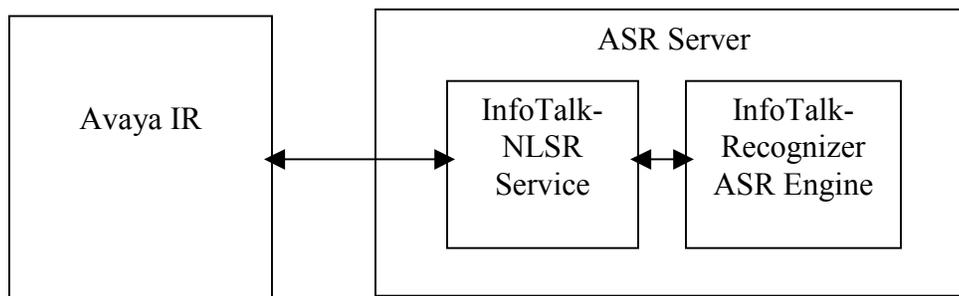


Figure 14: Avaya IR – InfoTalk System Architecture

To install InfoTalk-Recognizer and InfoTalk-NLSRService on the ASR server system, please follow the steps below:

- 1) Install InfoTalk-Recognizer as described in the “InfoTalk-Recognizer Installation Guide” document. Note that the default InfoTalk installation directory is “C:\Program Files\InfoTalk”. A different directory can be specified as necessary during installation.
- 2) After installing InfoTalk-Recognizer, locate the AVAYA directory containing the InfoTalk-NLSRService software. This software is normally installed into “C:\Program Files\InfoTalk\AVAYA” by default. If the default InfoTalk directory is modified during installation, it can be found by executing “echo %VOICETOUCH_PATH%” at the command prompt.
- 3) There are two files in the AVAYA directory: “Nlsrsrvr.exe” and “Nlsrconf.ini”. Nlsrsrvr.exe is the binary executable file for the InfoTalk-NLSRService software. “Nlsrconf.ini” is a textual configuration file that contains various parameter and grammar settings for InfoTalk-Recognizer ASR engine. These configuration parameters should be updated appropriately for the application and system before starting InfoTalk-NLSRService. Please refer to the “Application Configuration File” section of “InfoTalk-Recognizer Service Developer’s Guide” for the format and description of the configuration parameters. At a minimum, the following two parameters should be specified appropriately:

a) Number of ASR instances:

| Section | Parameter Name | Description |
|--------------|----------------|--|
| [rec-server] | instance_num | Number of ASR instances that InfoTalk-NLSRService should interface with. This should be set to the number of authorized InfoTalk-Recognizer licenses on the ASR server system. |

b) Grammar name(s)

Grammar names that are used by voice-enabled applications running on Avaya IR should be specified in the “[grammar:...]” section of the configuration file. For example, a grammar called “CountryEng” can be specified in the configuration as follows:

```
[grammar: name=CountryEng]
grammar_file=
    %VOICETOUCH_PATH%\Sample\Grammar\CountryEng.gdl
```

Note: The name of the grammar as specified in “[grammar: name=...]” should be consistent with the grammar name as specified in the GDL grammar file. In this example, the CountryEng.gdl file should contain a grammar specified with “grammar

COUNTRYENG” in its header in the grammar file. An Avaya IR application can specify this grammar in performing a speech recognition task.

- 4) After updating the configuration file as necessary, InfoTalk-NLSRServer service can be started by running “Nlsrsrvr.exe”.

5. Interoperability Compliance Testing

Integration Test Plan for InfoTalk-Recognizer 8 with Avaya Interactive Response R1.2.1 was used to validate the interoperability of this ASR Client/Server configuration. All executed test cases were completed successfully.

5.1. General Test Approach

The integration testing verified the interoperability of the Recognizer with the IR using the Avaya NLSR package. The scope included testing of the IR proxy interface, tools associated with the NLSR package, and speech data collection. An Avaya IR Designer script used the LreqPROXY command to send REQUEST commands to the Recognizer that in turn used the REPLY command to return its response. The REQUEST command was used by the IR to inform the Recognizer that the best three matches were to be generated against the speech segment. Later in the script the REQUEST command was used again to request the second best match. Based on this success, InfoTalk can leverage the REQUEST/REPLY command set to further enhance the functionality of the Recognizer integration with IR.

Capacity testing of the IR or Recognizer was out of the scope of these Application Notes. In addition, no effort was made to evaluate the accuracy or performance of the Recognizer.

5.2. Test Results

The testing showed that InfoTalk has fully and accurately implemented the NLSR ‘Client/Server Protocol for the Natural Languages Speech Recognition Offer for CONVERSANT Voice Processing Systems, 2.1’. All standard Client/Server communication was found to be working correctly.

6. Verification Steps

Administrators can verify their integration at several points.

- Ping should be used between the Client and Server to verify basic network connectivity.
- Use the IR’s “Speech and DPR Administration” → “Display Status” screen to verify that the link between the IR and each Recognizer server is in service.

7. Support

InfoTalk provides a range of support options:

Web Site: www.infotalkcorp.com

Singapore & South East Asia:

Tel : +65 6415 6800

Fax : +65 6415 6899
Email: support.sg@infotalkcorp.com

Hong Kong, Taiwan, Korea, Japan & Other Countries:
Tel : +852 2190 9600
Fax : +852 2788 2306
Email: support@infotalkcorp.com

China:
Tel : +8610 8802 6616
Fax : +8610 6870 0180
Email: support.cn@infotalkcorp.com

8. Conclusion

The InfoTalk-Recognizer R8 has successfully completed testing with the Avaya Interactive Response R1.2.1. The testing validated InfoTalk's implementation of Avaya's NLSR Client/Server protocol used for integrating the Avaya IR with Automatic Speech Recognition servers. The configuration guidelines provided in these Application Notes are intended to document the administrative steps that are required against both the IR and the Recognizer for a successful integration.

9. Reference Documentation

| Document Number | Title |
|--------------------------|--|
| Comcode: 700281264 | Avaya Interactive Response Release 1.2.1 Documentation CD |
| Supplement_for_NLSR74904 | Recognizer grammar and setting communication protocol description. |

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