Avaya Solution & Interoperability Test Lab

Application Notes for Nuance OpenSpeech Attendant with Avaya Interactive Response – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate the Nuance OpenSpeech Attendant with Avaya Interactive Response and Avaya Aura™ Communication Manager. Nuance OpenSpeech Attendant allows callers to speak the name of a person, department, service, or location and be automatically transferred to the requested party without waiting to speak to an operator. This solution uses MRCPv1 (Media Resource Control Protocol).

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 the Nuance OpenSpeech Attendant with Avaya Interactive Response and Avaya Aura™ Communication Manager. Nuance OpenSpeech Attendant (OSA) allows callers to speak the name of a person, department, service, or location and be automatically transferred to the requested party without waiting to speak to an operator. This solution uses MRCPv1.

1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. Feature testing focused on verifying that Nuance OSA can successfully recognize spoken names and extensions entered via DTMF and transfer the call to the correct destination. Blind transfers were verified. Other features covered included barge-in / no barge-in, adding new transfer entries, recording caller utterances, and accessing Maintenance Mode and Personal Administration Mode to record name and change PIN. The Nuance Speech Server and Avaya Interactive Response (IR) were configured to use MRCPv1.

Serviceability testing focused on verifying the ability of the Nuance OSA to recover from adverse conditions, such as server restarts, power failures, and disconnecting cables to the IP network.

1.2. Support

To obtain technical support for Nuance OpenSpeech Attendant, contact Nuance via email or through their website.

- **Web:** www.network.nuance.com
- **Email:** SpeechAttendant.Support@nuance.com
- **Phone:** (866) 434-2564 or (514) 390-3922

2. Reference Configuration

Figure 1 illustrates the configuration used to verify the Nuance OpenSpeech Attendant (OSA) solution with Avaya Interactive Response (IR), Avaya Aura™ Communication Manager, and a Nuance Speech Server. Nuance OSA is deployed on a dedicated application server running Windows 2003 Server, and the Nuance Speech Server was also running on a separate Windows 2003 Server. Avaya IR interfaces to Avaya Aura™ Communication Manager using T1 or Voice over IP. This solution may be supported with either interfaces, but these Application Notes will focus on the T1/Robbed-Bit Signaling interface. Avaya IR manages the interactions with speech server resources (i.e., speech recognition and text-to-speech) used by VXML applications. VXML pages generated by Nuance OSA are loaded and interpreted by Avaya IR, which controls the interaction with the user. To access the Nuance OSA application, a voice channel on Avaya IR must be configured to invoke the VXML application when an incoming call is received on that channel. Avaya IR and the Nuance Speech Server were configured to use MRCPv1.

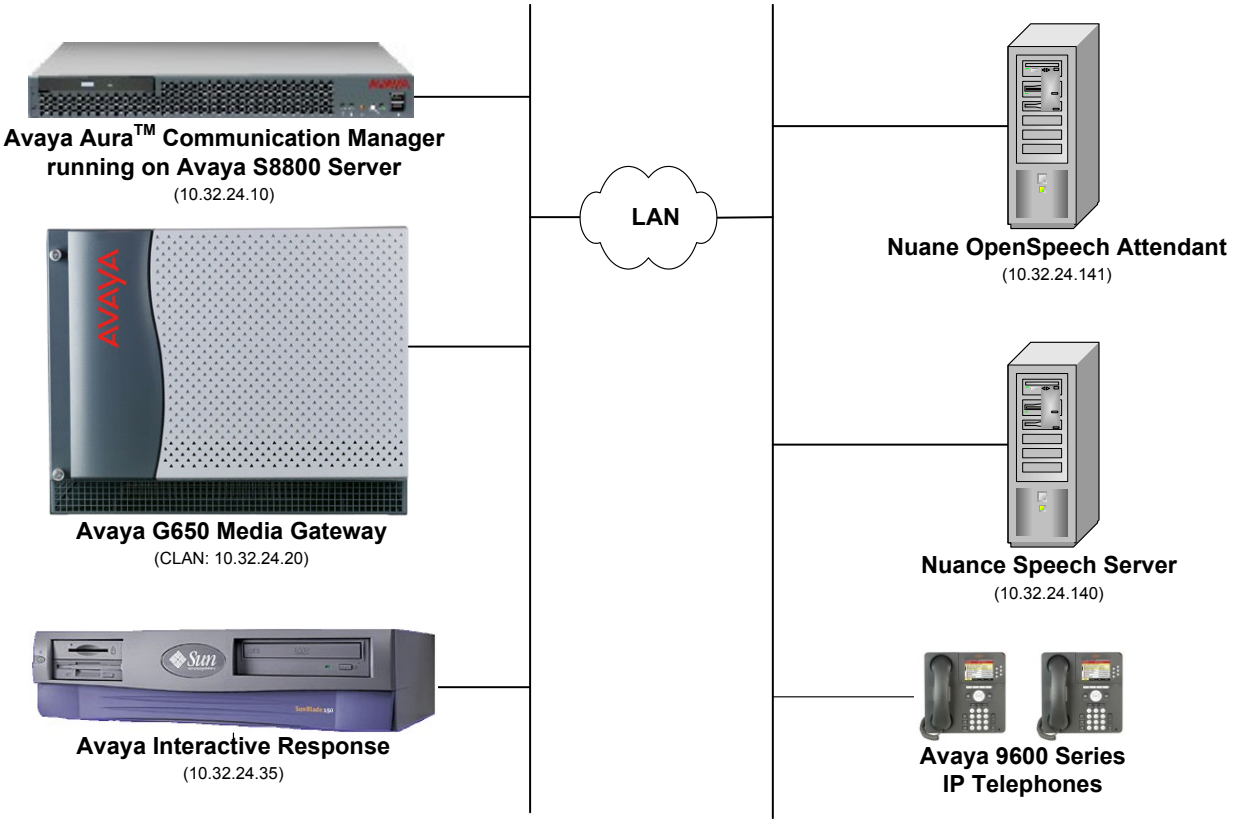


Figure 1: Configuration with Avaya Interactive Response and Nuance OSA

2.1. Equipment and Software Validated

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

Equipment	Software
Avaya Interactive Response	4.0 with Service Pack 4
Avaya S8800 Server with a G650 Media Gateway	Avaya Aura™ Communication Manager 6.0 with Service Pack 1
Avaya 9600 Series IP Telephones	3.110b (H.323)
Nuance OpenSpeech Attendant (OSA)	4.0 with Hotfix 4
Nuance Speech Server ▪ Nuance Recognizer ▪ Nuance Vocalizer for Network ▪ Nuance Speech Server	 9.0.12 5.0.0 5..1.1

3. Configure Avaya Aura™ Communication Manager

This section describes the configuration of the T1/Robbed-Bit Signaling link between Avaya Aura™ Communication Manager and Avaya IR and the stations that correspond to each Avaya IR port. In addition, it covers the configuration of the Hunt Group, Vector Directory Number (VDN), Vector, and Agent Login-IDs required for this solution. Refer to [1] and [2] for additional information on configuring Communication Manager. The configuration described below covers the following capabilities:

- Establish the T1 interface between Communication Manager and Avaya IR.
- Configure stations for the Avaya IR ports. Avaya IR ports are configured as **Stations** with type *DS1FD*.
- Configure the **Hunt Group** that the Avaya IR ports (i.e., Agent Login-IDs) will log into.
- Configure the **Agent Login-IDs** for the Avaya IR ports. Stations associated with Avaya IR ports automatically log into the hunt group via **Agent LoginIDs**.
- Configure the **VDN** that receives incoming calls. Inbound calls are routed to **VDN 75200** which invokes **Vector 200.**
- Configure the **Vector** that is invoked by VDN 75200. **Vector 200** queues the incoming call to **Hunt Group 270** with Avaya IR ports. **Vector 200** passes the DNIS and VDN numbers to Nuance OSA which in turn returns the transfer-to number using the configured **Converse Data Return Code**.

The following configuration is performed via the System Access Terminal (SAT). On the SAT, configure the DS1 board that provides T1 connectivity to the Avaya IR. The **Signaling Mode** of the DS1 board is set to *robbed-bit* signaling with a **Line Coding** and **Framing Mode** of *b8zs* and *esf*, respectively.

```
add ds1 a11                                                  Page   1 of   2
                                DS1 CIRCUIT PACK

            Location: 01A11                          Name: Avaya IR
            Bit Rate: 1.544                    Line Coding: b8zs
   Line Compensation: 1                       Framing Mode: esf
      Signaling Mode: robbed-bit

Interface Companding: mulaw
           Idle Code: 11111111
      Slip Detection? n                Near-end CSU Type: other
```

Figure 2: DS1 Circuit Pack

Configure each Avaya IR port as a station with the **Type** field set to *DS1FD*. Repeat this configuration for each Avaya IR port. These stations will be members of **Hunt Group 270** configured in **Figure 4**. The stations (IR ports) will automatically log into the split via the **Agent LoginIDs** configured as shown in **Figure 6**. When using the Voice over IP interface on Avaya IR, the ports are configured as 7434ND stations.

```
add station 23201                                          Page   1 of   4
                                    STATION

Extension: 23201                          Lock Messages? n               BCC: 0
     Type: DS1FD                          Security Code:                  TN: 1
     Port: 01A1101                      Coverage Path 1:                 COR: 1
     Name: IR Port 1                    Coverage Path 2:                 COS: 1
                                        Hunt-to Station:               Tests? y
STATION OPTIONS
                                             Time of Day Lock Table:
             Loss Group: 4
    Off Premises Station? y
       R Balance Network? n

          Survivable COR: internal
   Survivable Trunk Dest? y
```

Figure 3: Station for Avaya IR Port

The Avaya IR ports, configured as DS1FD stations, will automatically log into Hunt Group 270. Set the **Group Extension** field to a valid extension and enable the **ACD** and **Vector** options. This hunt group will be specified in the **Agent LoginIDs** configured in **Figure 6** and **7**.

```
add hunt-group 270                                         Page   1 of   3
                                  HUNT GROUP

           Group Number: 270                                ACD? y
             Group Name: Nuance OSA (T1)                  Queue? y
        Group Extension: 77000                           Vector? y
             Group Type: ucd-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:
```

Figure 4: Hunt Group for Avaya IR Ports (Page 1)

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

```
add hunt-group 270                                          Page   2 of   3
                                  HUNT GROUP

                    Skill? y      Expected Call Handling Time (sec): 180
                      AAS? y        Service Level Target (% in sec): 80 in 20
                 Measured: internal         Service Objective (sec): 20
     Supervisor Extension:                 Service Level Supervisor? n

      Controlling Adjunct: none

        VuStats Objective:
 Timed ACW Interval (sec):                   Dynamic Queue Position? n
   Multiple Call Handling: none

Interruptible Aux Threshold: none
                                Redirect on No Answer (rings):
                                      Redirect to VDN:
                  Forced Entry of Stroke Counts or Call Work Codes? n
```

Figure 5: Hunt Group for Avaya IR Ports (Page 2)

Add an **Agent LoginID** for each IVR port. The **AAS** option is enabled and the **Port Extension** is set to the extension of the stations corresponding to each Avaya IR port. Repeat this configuration for each DS1FD station. In this configuration, agent login ID 26201 was created.

```
add agent-loginID 26201                                     Page   1 of   2
                                AGENT LOGINID

               Login ID: 26201                                  AAS? y
                   Name: IR Port 1                            AUDIX? n
                     TN: 1                              LWC Reception: spe
                    COR: 1                    LWC Log External Calls? n
          Coverage Path:                     AUDIX Name for Messaging:
          Security Code:
         Port Extension: 23201               LoginID for ISDN Display? n

                                                       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
                                            Forced Agent Logout Time:   :

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

Figure 6: Agent LoginID for IVR Ports (Page 1)

On **Page 2** of the **Agent LoginID** form, set the skill number (**SN**) to hunt group 270, which is the hunt group (skill) that the Avaya IR ports will log into.

```
add agent-loginID 26201                                    Page   2 of   2
                                  AGENT LOGINID
     Direct Agent Skill:                                Service Objective? n
Call Handling Preference: skill-level                 Local Call Preference? n

    SN   RL SL          SN   RL SL          SN   RL SL          SN   RL SL
 1: 270     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:
```

Figure 7: Agent LoginID for Avaya IR Ports (Page 2)

Incoming calls will be routed to VDN 75200 based on the DNIS. VDN 75200 will invoke vector 200 which will queue the call to the hunt group containing Avaya IR ports. Avaya IR will invoke the Nuance OSA application and wait for the transfer-to number. Use the **add vdn 75200** command to create the VDN that will handle all incoming calls.

```
add vdn 75200                                              Page   1 of   3
                           VECTOR DIRECTORY NUMBER

                             Extension: 75200
                                 Name*: Nuance OSA
                           Destination: Vector Number        200
                     Attendant Vectoring? n
                   Meet-me Conferencing? n
                     Allow VDN Override? n
                                   COR: 1
                                   TN*: 1
                              Measured: none

                Service Objective (sec): 20
          VDN of Origin Annc. Extension*:
                               1st Skill*:
                               2nd Skill*:
                               3rd Skill*:

* Follows VDN Override Rules
```

Figure 8: Vector Directory Number (VDN)

VDN 75200, configured above, will invoke vector 200 which will queue the call to hunt group 270. The **converse-on** step is used to pass the ANI and VDN numbers. Communication Manager will then **collect** the transfer-to number sent by Nuance OSA. Configure vector 200 as shown below. These steps are required when using a T1/Robbed-Bit Signaling interface. When using a Voice over IP interface on Avaya IR, the call is routed to the hunt group using a **queue-to skill** step. The **converse-on** and **collect** steps should not be used.

```
change vector 200                                          Page   1 of   6
                                CALL VECTOR

    Number: 200              Name: Nuance OSA
Multimedia? n      Attendant Vectoring? n    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? n
 Variables? y   3.0 Enhanced? y
01 wait-time    2   secs hearing ringback
02 converse-on  skill 270  pri h passing ani    and vdn
03 collect      16   digits after announcement none     for none
04 route-to     digits with coverage y
05 stop
06
07
08
09
10
11
12

                        Press 'Esc f 6' for Vector Editing
```

Figure 9: Call Vector

Configure the **Converse Data Return Code** field on **Page 7** of the Feature-Access Codes form as shown in **Figure 10**.

```
change feature-access-codes                                Page   7 of   10
                              FEATURE ACCESS CODE (FAC)

                         Call Vectoring/Prompting Features

   Converse Data Return Code: #12

Vector Variable 1 (VV1) Code:
Vector Variable 2 (VV2) Code:
Vector Variable 3 (VV3) Code:
Vector Variable 4 (VV4) Code:
Vector Variable 5 (VV5) Code:
Vector Variable 6 (VV6) Code:
Vector Variable 7 (VV7) Code:
Vector Variable 8 (VV8) Code:
Vector Variable 9 (VV9) Code:
```

Figure 10: Feature Access Codes

Configuration of Communication Manager is complete. Use the **save translation** command to save these changes.

4. Configure Avaya Interactive Response (IR)

This section covers the configuration of Avaya IR. Communication Manager routes incoming calls to Avaya IR over a T1 interface. Each channel of the T1 interface is assigned a phone number that should match the corresponding station extensions configured on Communication Manager and an Avaya IR VoiceXML application. Refer to [3] for additional information on Avaya IR.

The configuration steps required on Avaya IR are summarized below.

- Access the Avaya IR via a web browser and log in.
- Stop the Voice System (i.e., Avaya IR) prior to configuring the T1 interface.
- Configure the T1 interface to the Avaya G650 Media Gateway.
- Administer and assign an ASR and TTS engine.
- Start the Voice System.
- Assign channels to equipment groups.
- Assign phone numbers to channels.
- Assign services (VoiceXML applications) to channels.

Note: The Nuance OSA solution is also supported with a Voice over IP interface between Avaya IR and Communication Manager. However, the focus of these Application Notes is the T1 interface.

The packages installed on Avaya IR are displayed below. To verify which packages are installed on Avaya IR, use the "pkginfo | grep AV" command from the command line.

```
avir(root)# pkginfo | grep AV
IVR         AVasai                          Adjunct/Switch Application Interface
IVR         AVasr                           Avaya Recognizer - Utilities
IVR         AVbackrst                       Backup/Restore Utilities
IVR         AVctidip                        CTI Data Interface Process
IVR         AVftst                          Feature Test Script Package
IVR         AVir                            Interactive Response Base System
IVR         AVjdbcint                       JDBC Integration
IVR         AVlm                            License Manager
IVR         AVmrcpasr                       MRCP ASR Proxy
IVR         AVmrcptts                       MRCP TTS Proxy
IVR         AVmrcpv2asr                     MRCPv2 ASR Proxy
IVR         AVmrcpv2tts                     MRCPv2 TTS Proxy
IVR         AVnms                           NMS Package
IVR         AVsc                            Service Creation Integration Package
Release 6.1
IVR         AVsproxy                        Speech Proxy Base Software
IVR         AVsrproxy                       Speech Proxy SR - Speech Recognition
IVR         AVtsm                           Transaction State Machine
IVR         AVttsprxy                       Proxy Text-to-Speech Package
IVR         AVucid                          Universal Call ID
IVR         AVval                           Avaya IR System Validation Package
IVR         AVvoicxml2-0                    Voice XML Interpreter
IVR         AVvoip                          Voice Over IP
IVR         AVwebadm                        Web Administration
IVR         AVweblm                         WebLM Server
```

```
IVR          AVwebservice                        Avaya IR Web Services
IVR          AVxfer                              Call Transfer and Bridge Package
system       SUNWav1394                          IEEE1394 AV Driver
JAVAAPPS     SUNWjavaapps                        A set of Java Demo Applications - j
dictionary, jdiskreport. jedit, jgraphpad and jspider
JAVAAPPS     SUNWjmf                             Java Media Framework
JAVAAPPS     SUNWjmfmp3                          JMF MP3 Plugin
```

Figure 11: Installed Avaya IR Packages

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 in **Figure 12**. Select the **Web Administration** link to display the log in screen (not shown), and log into Avaya IR with the appropriate credentials.

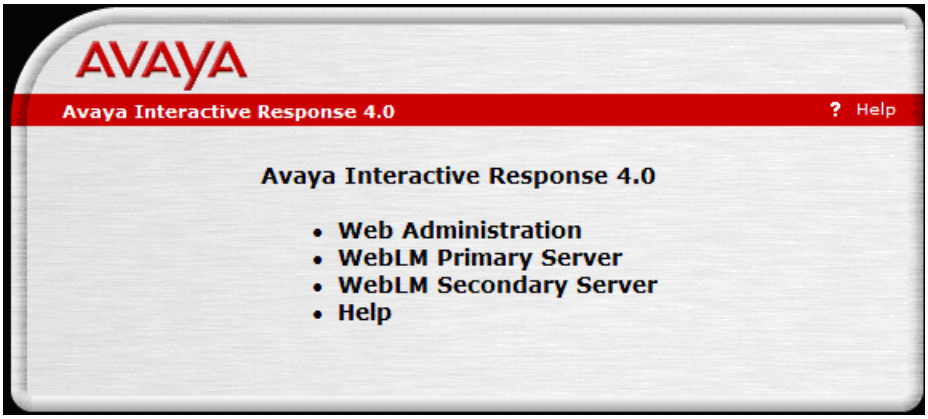


Figure 12: Initial Avaya IR Screen

After successfully logging into Avaya IR, the main Avaya IR configuration webpage is displayed as shown in **Figure 13**.

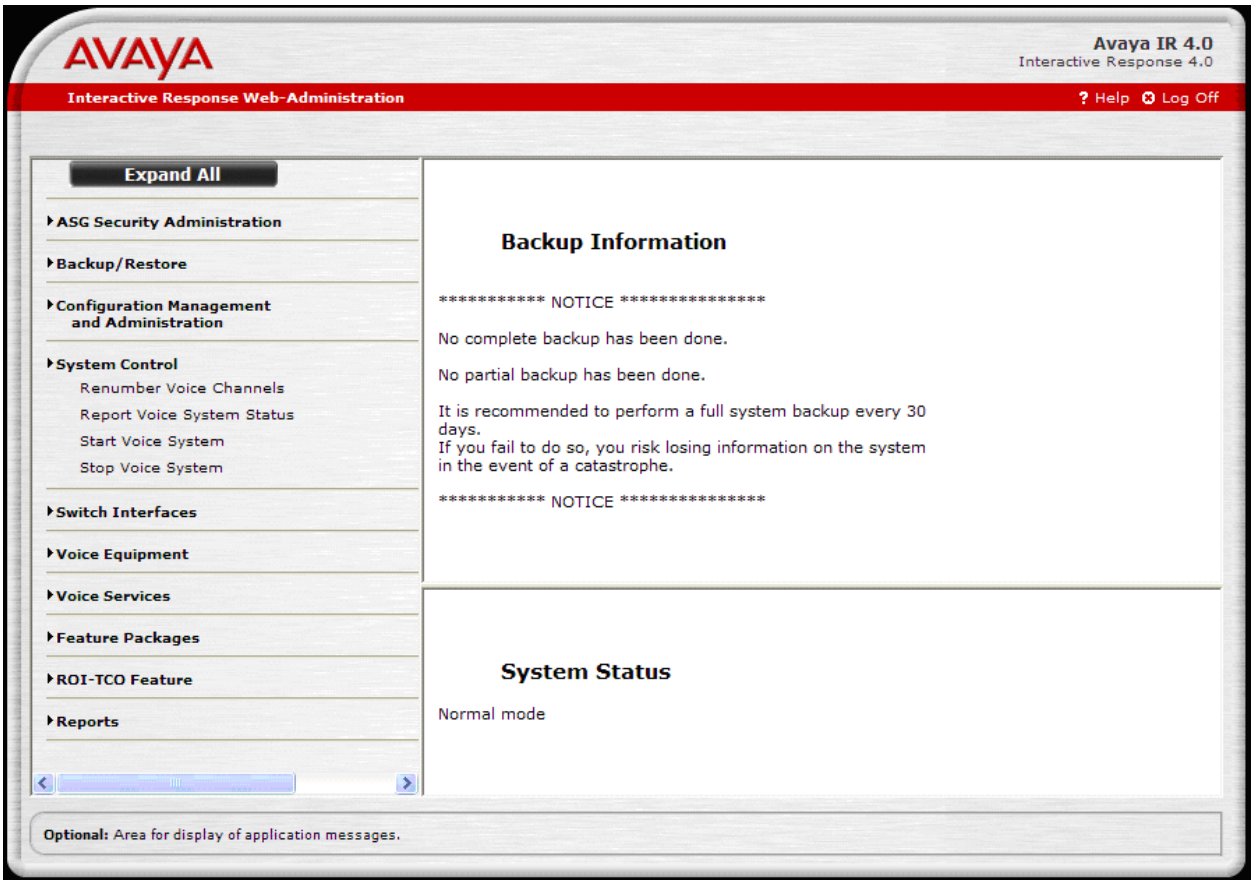


Figure 13: Main Avaya IR Webpage

Prior to configuring the T1 interface to the Avaya G650 Media Gateway, stop the Avaya IR by selecting the **System Control → Stop Voice System** link from the left pane in **Figure 13**. The **Stop Voice System** page (not shown) is displayed. Click the **Submit** button and wait until the system displays a message at the bottom of the page indicating that the voice system has completely stopped.

To configure the T1 interface to the Avaya G650 Media Gateway follow these steps:

1. Under **Switch Interfaces** in the left pane, select the **Digital Interfaces** option to display the **Digital Interfaces Protocols** page (not shown).
2. Select the **Assign Card** link to display the **Assign Card** page shown in **Figure 14**. On this page, set the **Card** field to the appropriate number, set the **Card Type** field to *T1*, and set the **Trunk 1** field to *Loop Start T1*. When complete, click the **Submit** button to display the **Assign Card 1: Type T1** page shown in **Figure 15**.

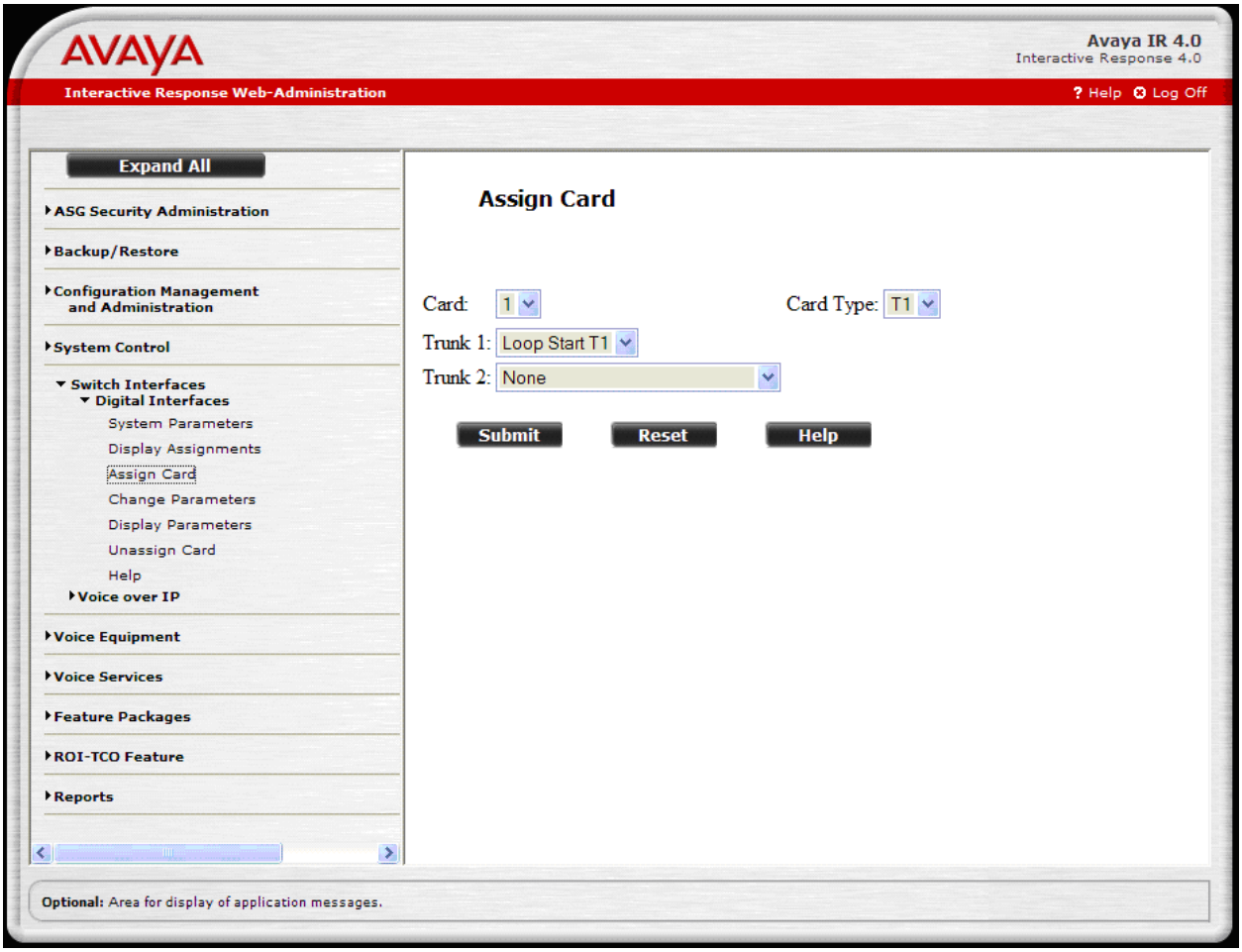


Figure 14: Assign Card

On the page shown in **Figure 15**, set the **Frame Type** field to *ESF* and the **Line Code** field to *B8ZS*. Accept the default for the other fields as shown in the figure. Click the **Submit** button.

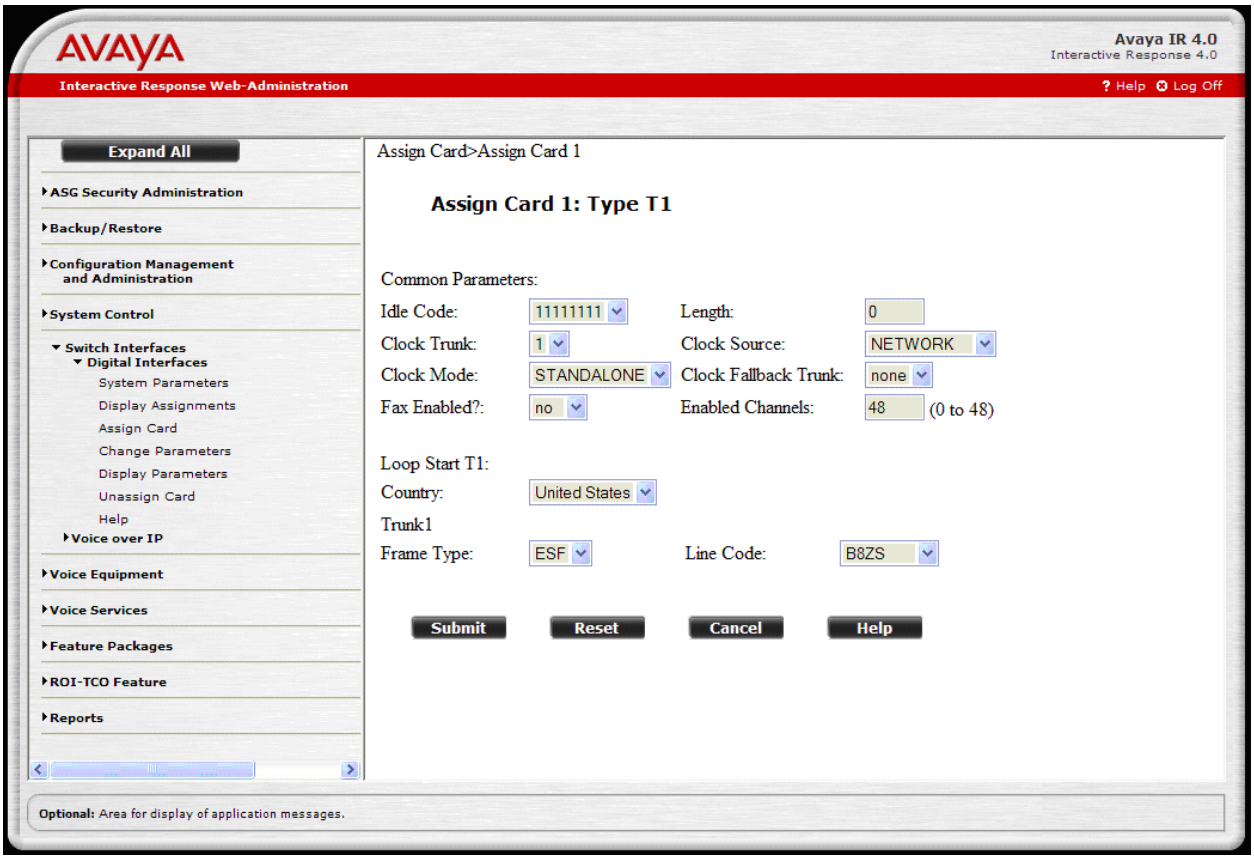


Figure 15: Assign Card Parameters

Next, configure the Automatic Speech Recognition (ASR) server in Avaya IR by selecting the **Administration** option under **Speech and DPR Administration** in the left pane and then selecting **Speech Recognition and DPR Configuration**. For this solution, a Nuance Speech Server was used as the ASR server. The ASR server should be configured as shown in **Figure 16**. The following Speech Recognition and DPR Configuration webpage is shown after it was already configured. The **Engine** field should be set to *mrcp-scansoft* (for MRCPv1), the **Server Name** and **IP Address** fields should be set to the IP address corresponding to the Nuance Speech Server. Furthermore, the **Ports** field should be set to the number of ports available on the speech server according to its installed license and the **Base Port** field should be set to *4900* and defaults can be used for remaining fields.

Note: If Avaya IR uses the hostname of the Nuance Speech Server to communicate, ensure that Avaya IR can resolve the hostname to an IP address. In this configuration, an entry was added to the */etc/hosts* file of Avaya IR corresponding to the hostname and IP address of the Nuance Speech Server, otherwise the recordings of caller utterances could not be retrieved successfully.

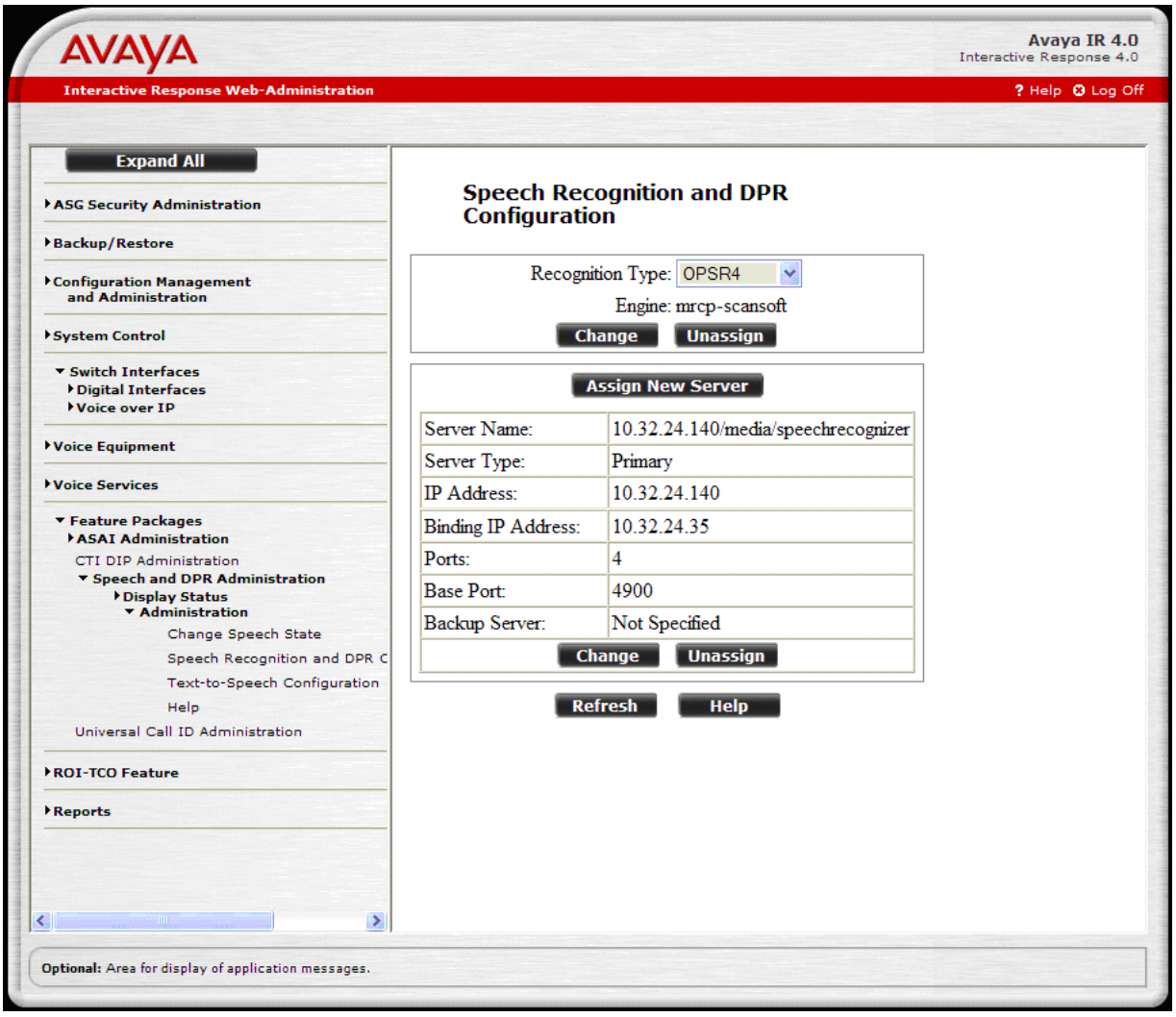


Figure 16: Speech Recognition and DPR Configuration

To Configure the Text-to-Speech (TTS) engine in Avaya IR, select the **Administration** option under **Speech and DPR Administration** in the left pane and then select **Text-to-Speech Configuration**. For this solution, a Nuance Speech Server was used as the TTS server. The TTS server should be configured as shown in **Figure 17**. The following TTS configuration webpage is shown after it was already configured. In this configuration, the default voice of *samantha* was used. The **Engine** field should be set to *mrcp-scansoft* (for MRCPv1), the **Server Name** and **IP Address** fields should be set to the IP address corresponding to the Nuance Speech Server. Furthermore, the **Ports** field should be set to the number of ports available on the speech server according to its installed license and the **Base Port** field should be set to *4900*.

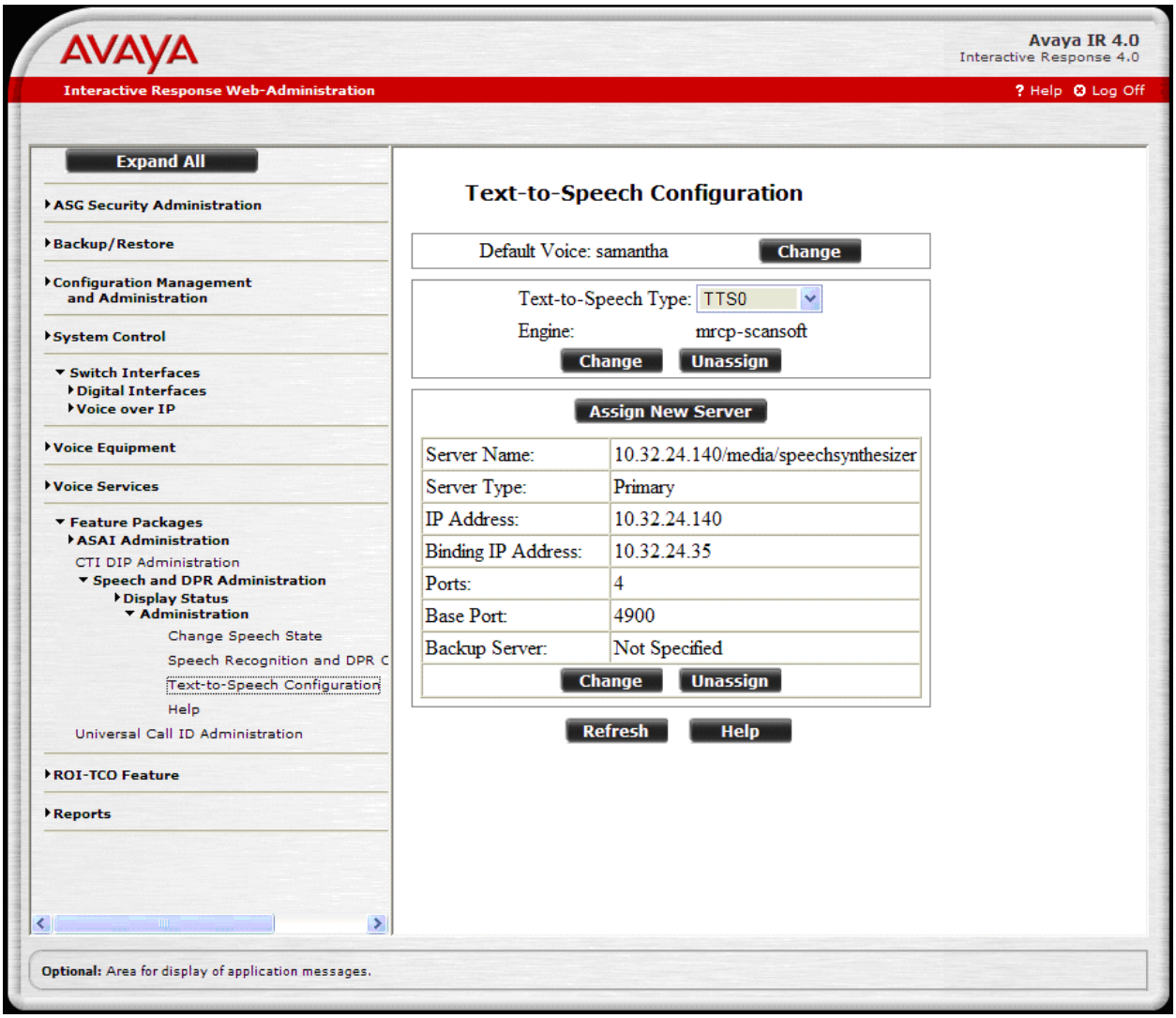


Figure 17: Text-to-Speech Configuration Summary

After the T1 card and speech server are successfully configured, start the Avaya IR by selecting **Start Voice System** under **System Control** in the left pane. Before proceeding, wait for the system to display a message indicating that the startup of the voice system is complete.

Next, assign the channels of the T1 card to equipment group '2'. Select the **Channels to Groups** option under Voice Equipment in the left pane, and then select the **Assign** link to display the **Assign Channels to Equipment Groups** page shown in **Figure 18**. Assign group '2' to channels 0-23, which corresponds to the 24 T1 channels, and then click **Submit**.

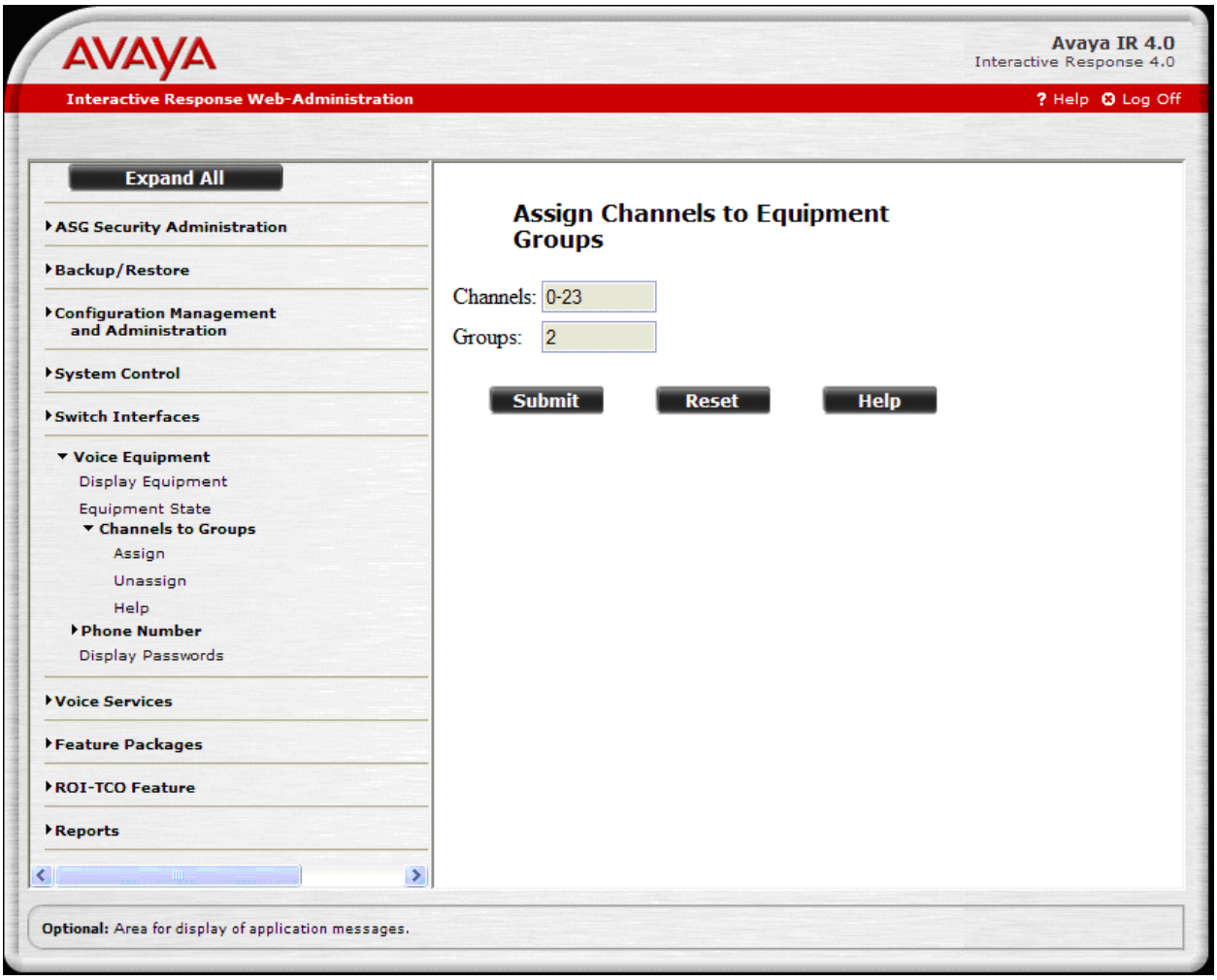


Figure 18: Assign Channels to Equipment Groups

After assigning channels to groups, assign phone numbers to channels. Select the **Phone Number** link under **Voice Equipment** in the left pane to display the **Phone Number – Channel Assignment** page and select the **Assign** link. Assign phone numbers 23201 to 23204 to channels 0 to 3, respectively, as shown in **Figure 19** and then click **Submit**. If more ports were defined, more phone numbers could be used.

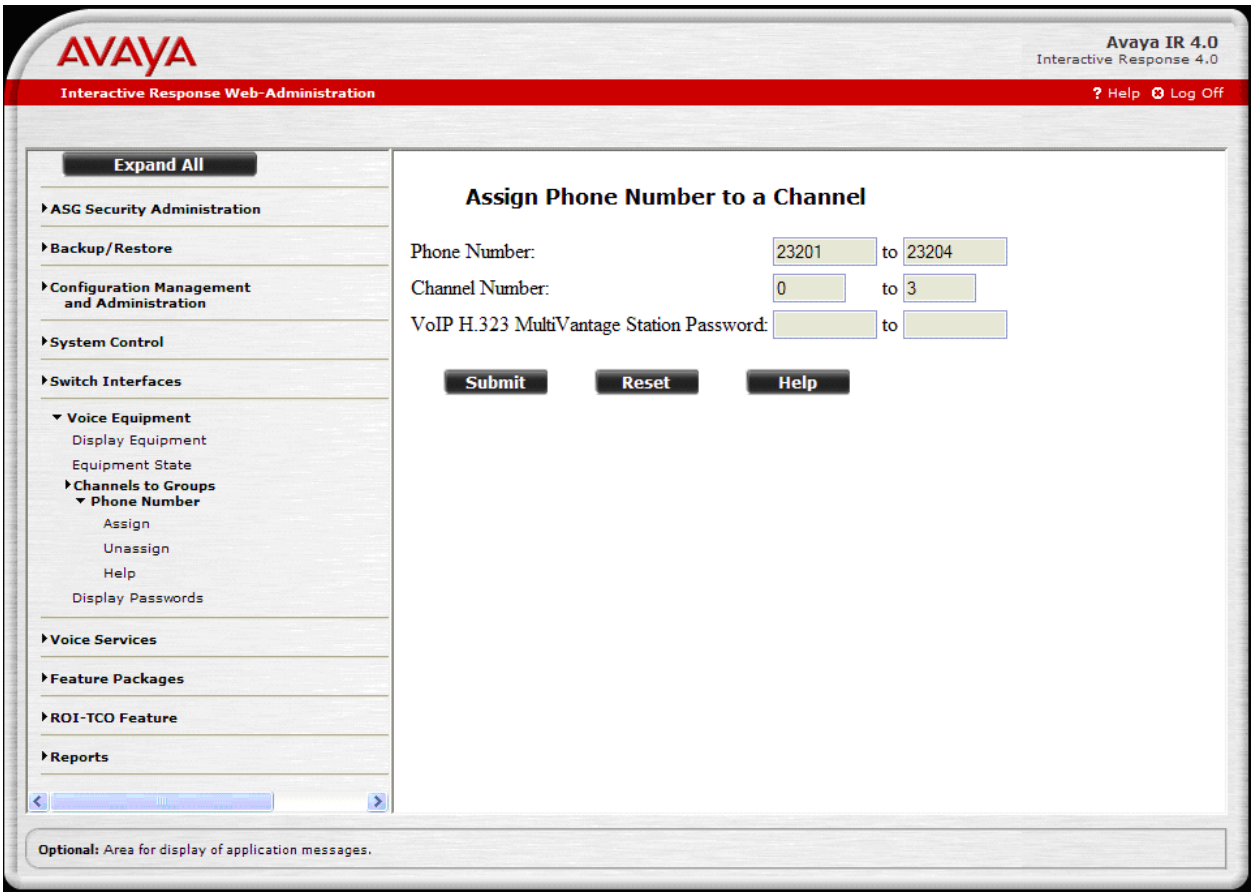


Figure 19: Assign Phone Number

Now, assign a Nuance OSA application to a channel (e.g., channel 0 was arbitrarily chosen for this example). This specifies which application a particular Avaya IR channel would run when it receives an incoming call. Select **Voice Services → Channel Services** from the left pane to display the **Channel Services** page in **Figure 20**. Enable the checkbox for channel 0 and then click the **Assign Selected** button.

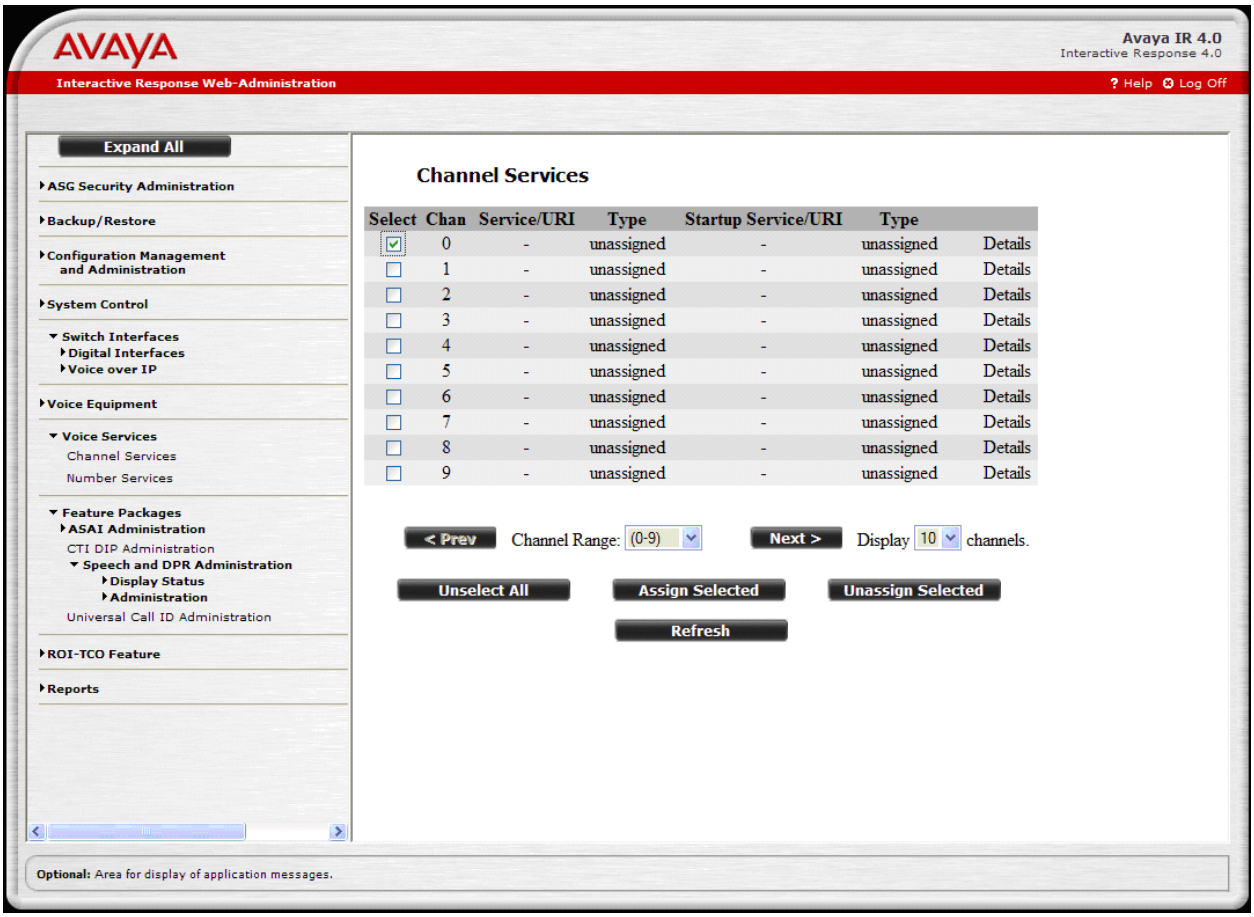


Figure 20: Channel Services

Configure the **Assign Services to Channels** page as shown in **Figure 21**. This configuration assigns the Nuance OSA application named to channel 0. Set the **Assign** field to *VXML URI,* set the **URI** field to *http://10.32.24.141/OpenSpeech/Attendant/servlet/aa?avaya_inband_anidnis=anything&avaya_acm_fac=%2312,* and set the **To Chan(s)** field to '0'. The required parameters in the VXML URI allow the ANI and DNIS to be passed to the Nuance OSA and also specify the Converse Data Return Code of '#12" configured in **Figure 10**. Repeat this procedure for all channels that should run this application. Click **Submit**.

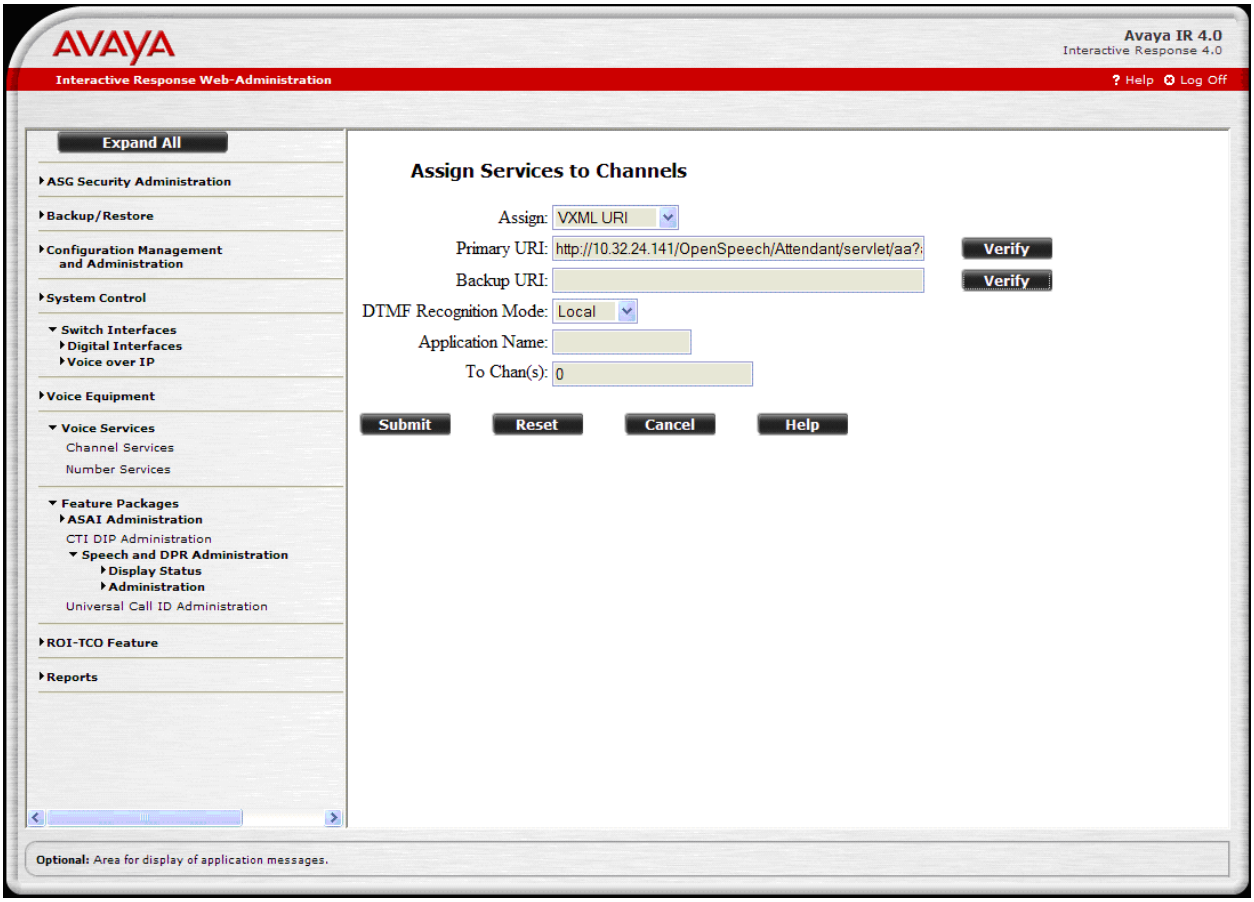


Figure 21: Assign Services to Channels – VXML Application

To view the status of the channels and the channel configuration details, select **Display Equipment** from the left pane. The page in **Figure 22** is displayed. Verify the state of the configured channels. In this configuration, channels 0-3 are in-service and channel 0 was assigned to the Nuance OSA application. Channel 0 is assigned phone number 23201.

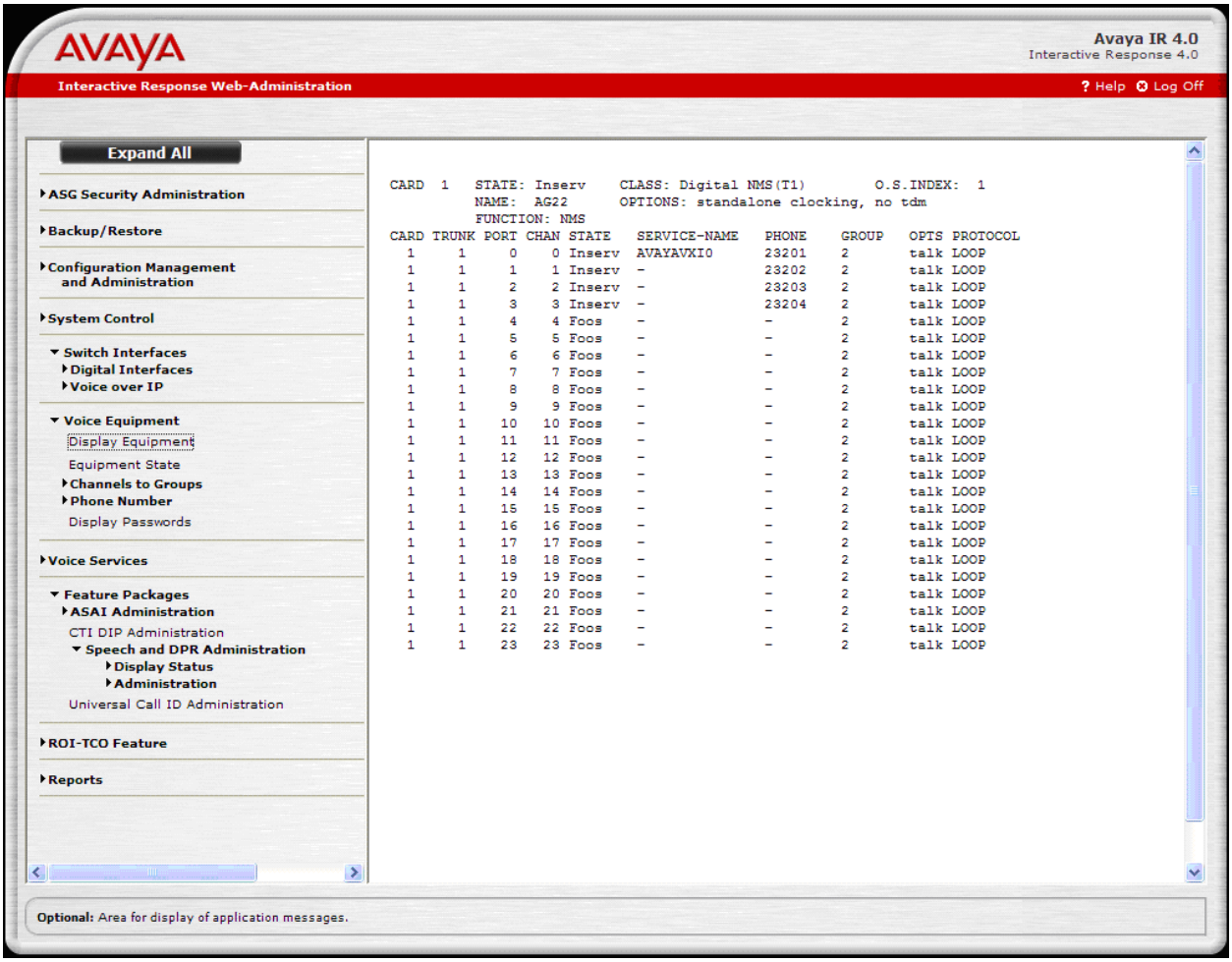


Figure 22: Display Equipment

In Avaya IR, change the **client.inet.connection.persistent** parameter to '0' in the *default0.cfg*, *default1.cfg,* and *default2.cfg* files located in the */vs/data/vxml* directory. Stop the voice system with the **stop_vs** command and then restart the voice system with the **start_vs** command.

5. Configure Nuance OpenSpeech Attendant

This section covers the procedure for configuring Nuance OpenSpeech Attendant (OSA). The procedure includes the following areas:

- Administer settings in the Configuration Panel
- Administer transfer entries in the Phone Directory and Menu Editor
- Administer top-level menu in the Phone Directory and Menu Editor
- Administer Caller Utterance Recordings

Note: The Vocalizer config file, `ttsrshclient.xml`, located in `C:\Program Files\Nuance\Nuance Vocalizer for Network 5.0\config` directory of the speech server must be tuned to interoperate successfully with Nuance OSA. The tag `<ssml_validation>` must be set to *none*. The default value is *strict*.

Nuance OSA is configured through Admin Tools which can be started by navigating to **Start→Nuance→Admin Tools**. The initial screen is displayed as shown in **Figure 23**.

Figure 23: Admin Tools

5.1. Administer Settings in the Configuration Panel

To open the **Configuration Panel**, click on this option in the **Admin Tools** window in **Figure 23**. The login prompt will be displayed to the user as shown in **Figure 24**. Log in with the appropriate credentials using *Level 2* access level.

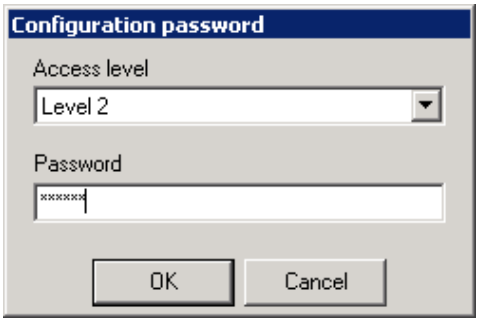


Figure 24: Configuration Panel Login Window

The **Configuration Panel** shown in **Figure 25** is displayed. The **Configuration Panel** allows the transfer mode and operator extension number to be configured. Nuance OSA supports blind transfers with Avaya IR. To enable OSA for blind transfers, set the **Default Transfer Options** to **UNSUPERVISED** and **Gateway Transfer Mode Bridged** field to *NO* as shown in the figure below. The **Operator Extension Number** field should be set to a valid extension on Communication Manager. Click **Apply**.

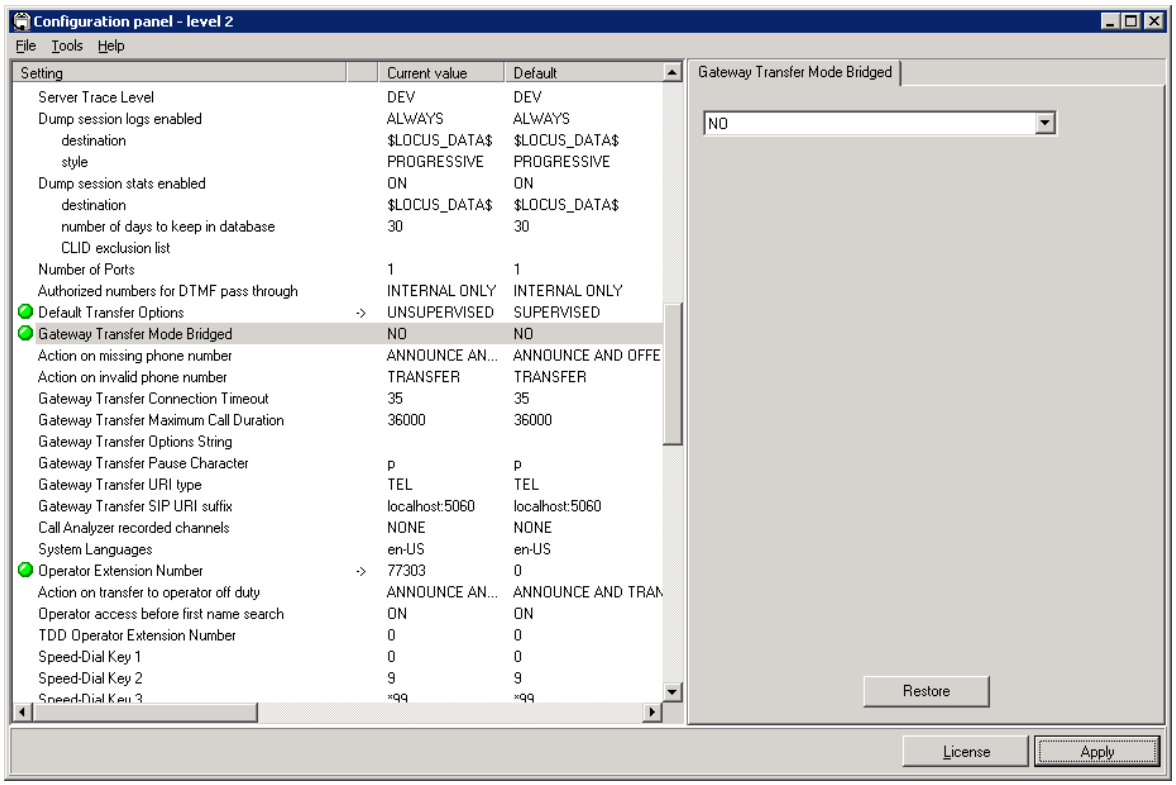


Figure 25: Configuration Panel

Next, close the **Configuration Panel**. Activate the changes when prompted by the system as shown **Figure 26**.

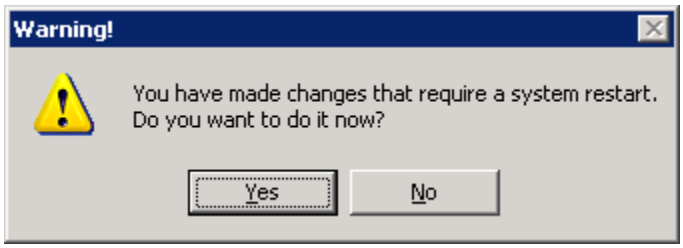


Figure 26: Activate Changes in Configuration Panel

The following window is displayed. Click **OK**.

Figure 27: Startup in Progress Window

5.2. Administer Transfer Entries in Phone Directory and Menu Editor

From **Admin Tools**, click on the **Phone Directory and Menu Editor** option. **Figure 28** is displayed.

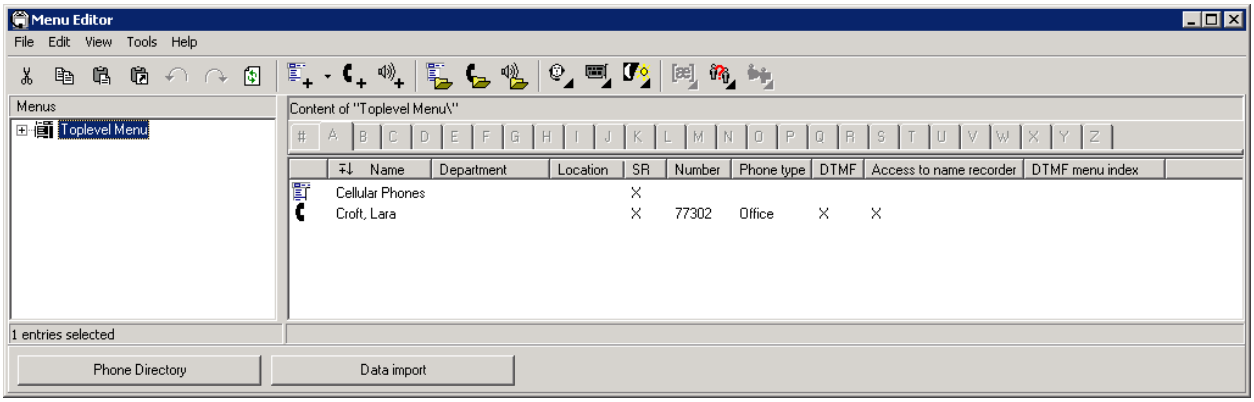


Figure 28: Phone Directory and Menu Editor

Next, select **File→New→Transfer Entry** from the menu options. The Creating transfer entry window is displayed as shown in **Figure 29**. Configure the **First names** and **Last names** for this entry and set the **Number** to a valid extension. Enable the **Access to personal functions** and **Access to name recorder** options and set the **PIN** fields so that this user can access the Personal Administration Mode (PAM) to change their name recording. Click **OK**.

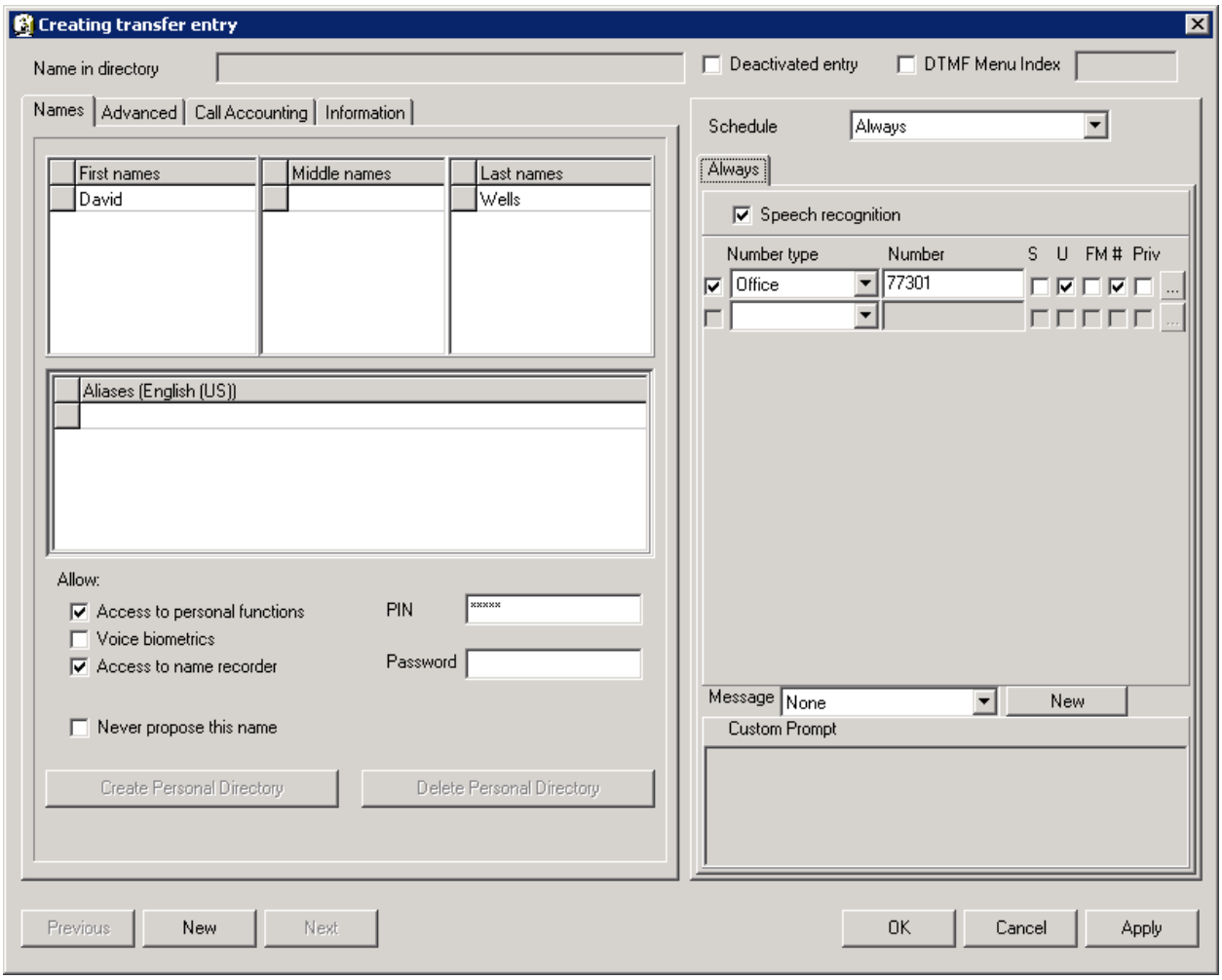


Figure 29: Creating Transfer Entry

The new transfer entry is now displayed in the Menu Editor window, but the entry has not been activated yet. Click on the **Activate Changes** icon for the new entry to take effect.

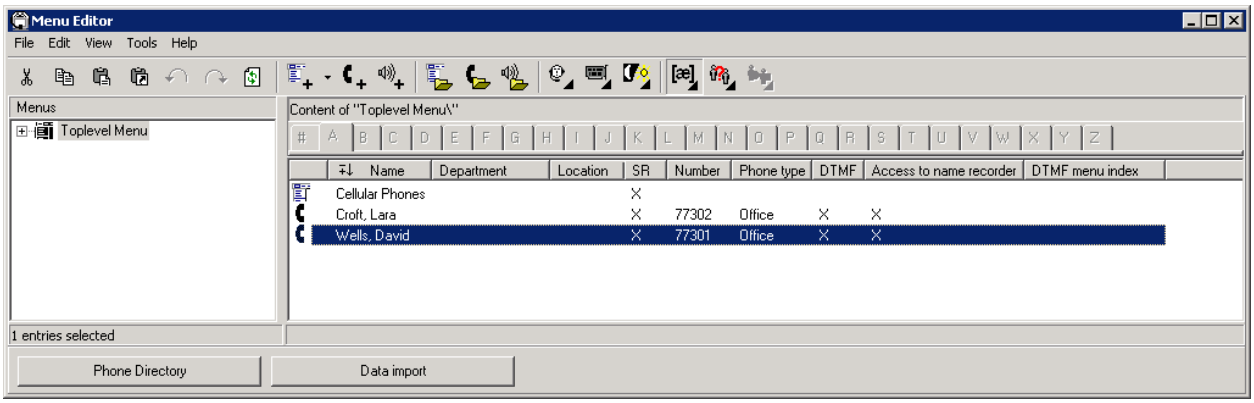


Figure 30: Menu Editor with New Transfer Entry

The following prompt is displayed to activate the new transfer entry so that it would be recognized by Nuance OSA.

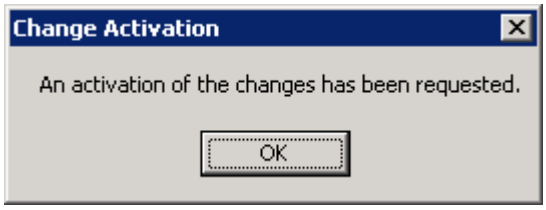


Figure 31: Change Activation

5.3. Administer Top-Level Menu in Phone Directory and Menu Editor

Nuance OSA allows the configuration of multiple entry points. The use of multiple entry points enable individual services or departments to be assigned a different entry point, which can be invoked based on DNIS or CLID number. When a call is received, Nuance OSA can route the call to the appropriate entry point based on the dialed number (DNIS) or the caller's phone number (CLID). In this example, an entry point was configured using the DNIS option.

Create a new entry point by selecting **File→New→Top-Level Menu** from the menu options. The window in **Figure 32** is displayed. Enter a descriptive name in the **Aliases** field, enable the **Access to name recorder** option, and set the **PIN** field for use with PAM. Click **OK** and activate the changes.

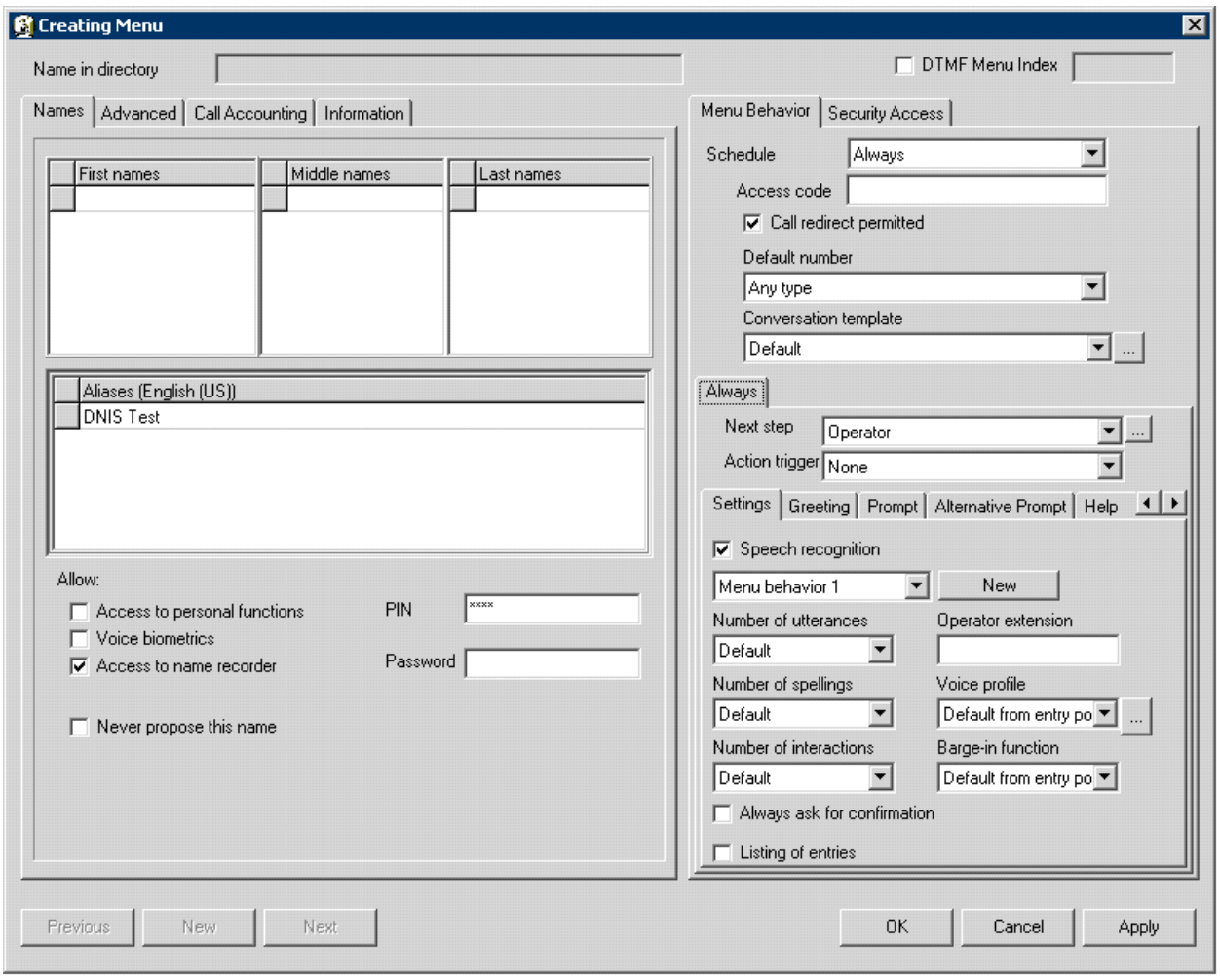


Figure 32: Creating Menu

From the **Menu Editor**, navigate to **Edit→Ports** and Entry Points to display the window in **Figure 33**. Select the first item under **Port assignment** in the left pane and then select **Add→Entry Point** from the menu options. **Figure 34** is displayed.

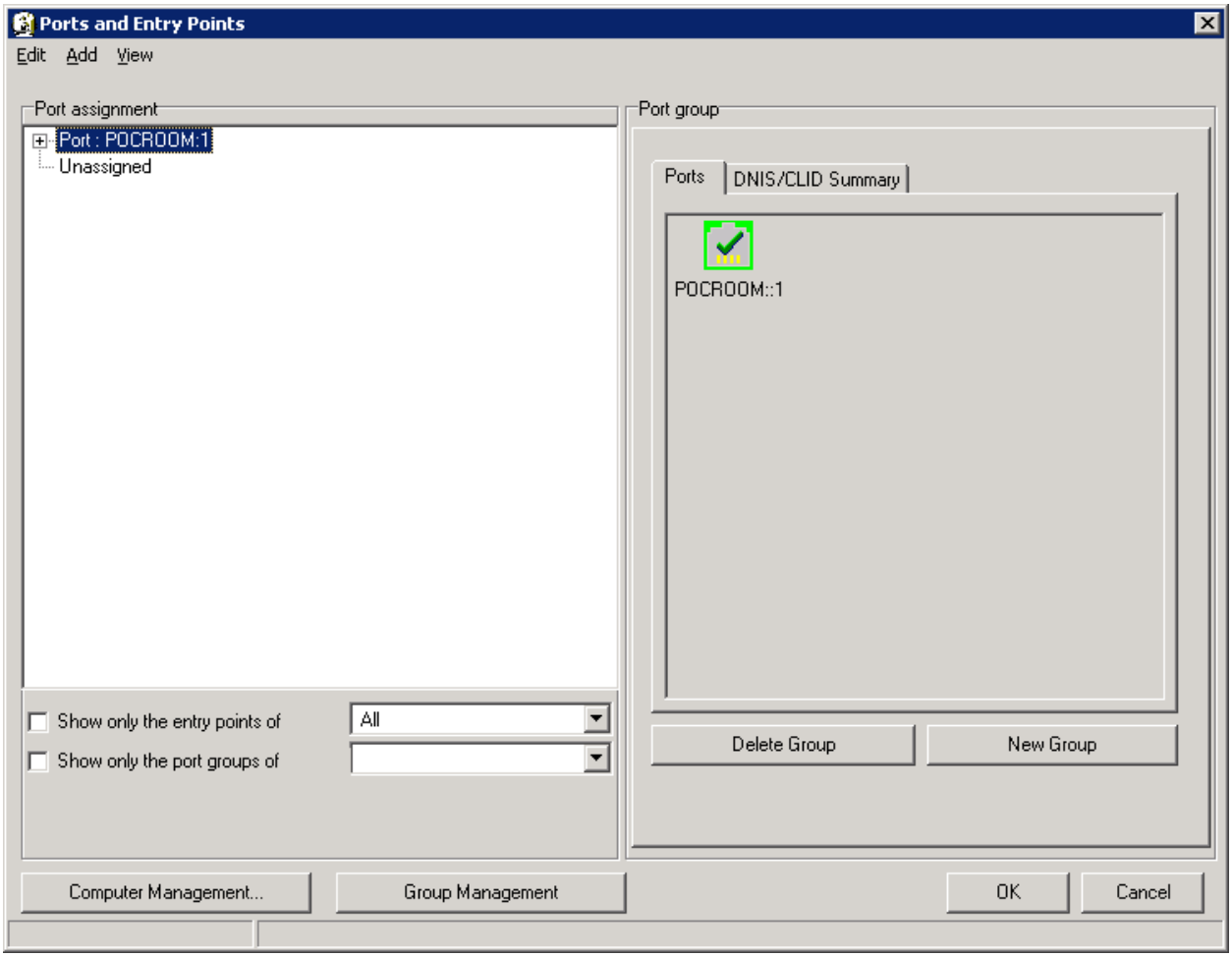


Figure 33: Ports and Entry Points

In the Ports and Entry Points window in **Figure 34**, set the **Home menu** and **Main menu** to the new entry point configured in **Figure 32**. Select the **DNIS/CLID** tab and enter the pilot number associated with the appropriate VDN configured on Communication Manager. Click **OK**. In this example, this entry point will be used when Nuance OSA receives a DNIS of 75201. Note that the configuration of VDN 75201 and its associated vector are not shown in these Application Notes, but should be configured as shown in **Figure 8** and **Figure 9.**

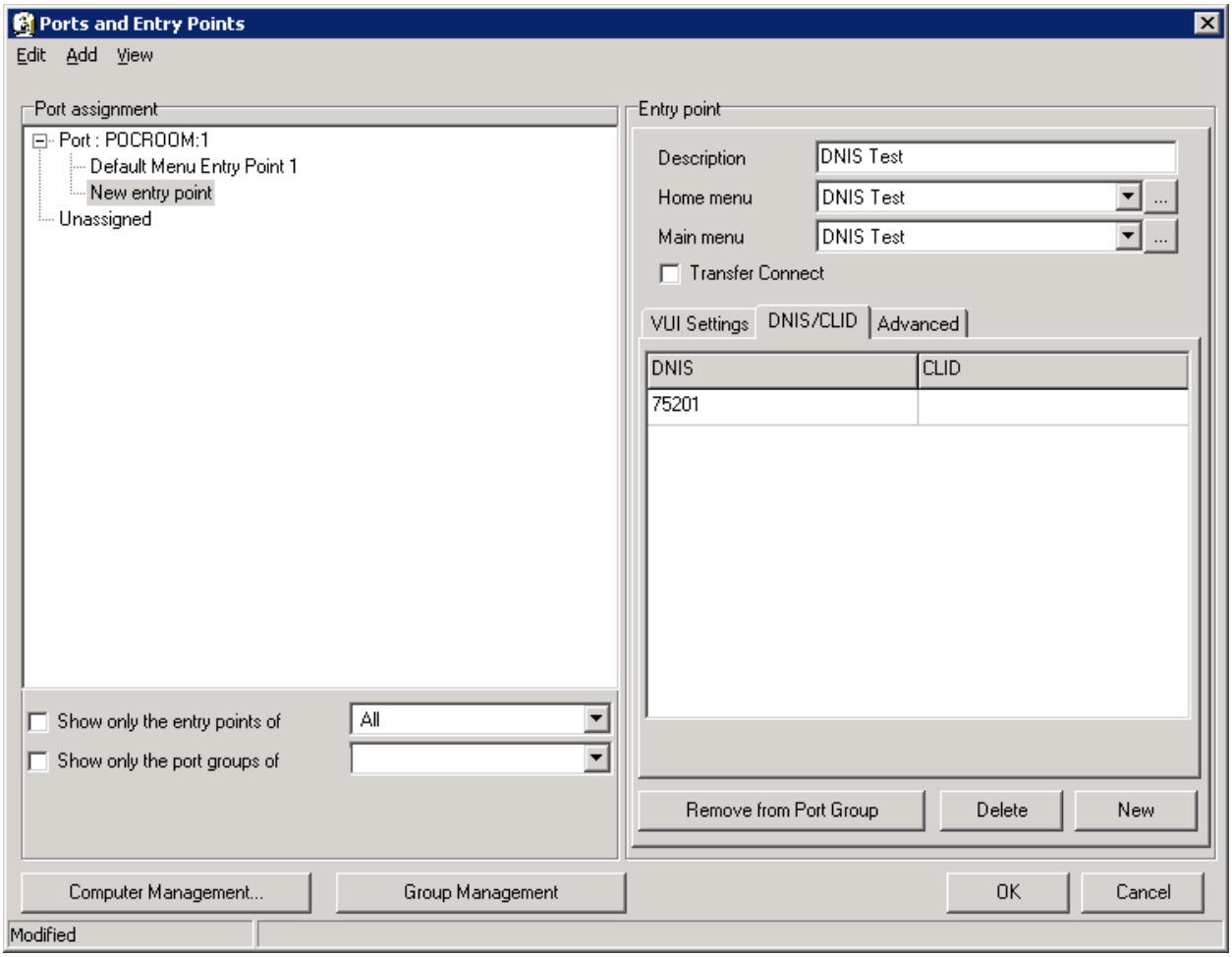


Figure 34: New Entry Point (DNIS/CLID Tab)

In the **VUI Settings** tab, set the **Voice Profile** as shown below. Click **OK**.

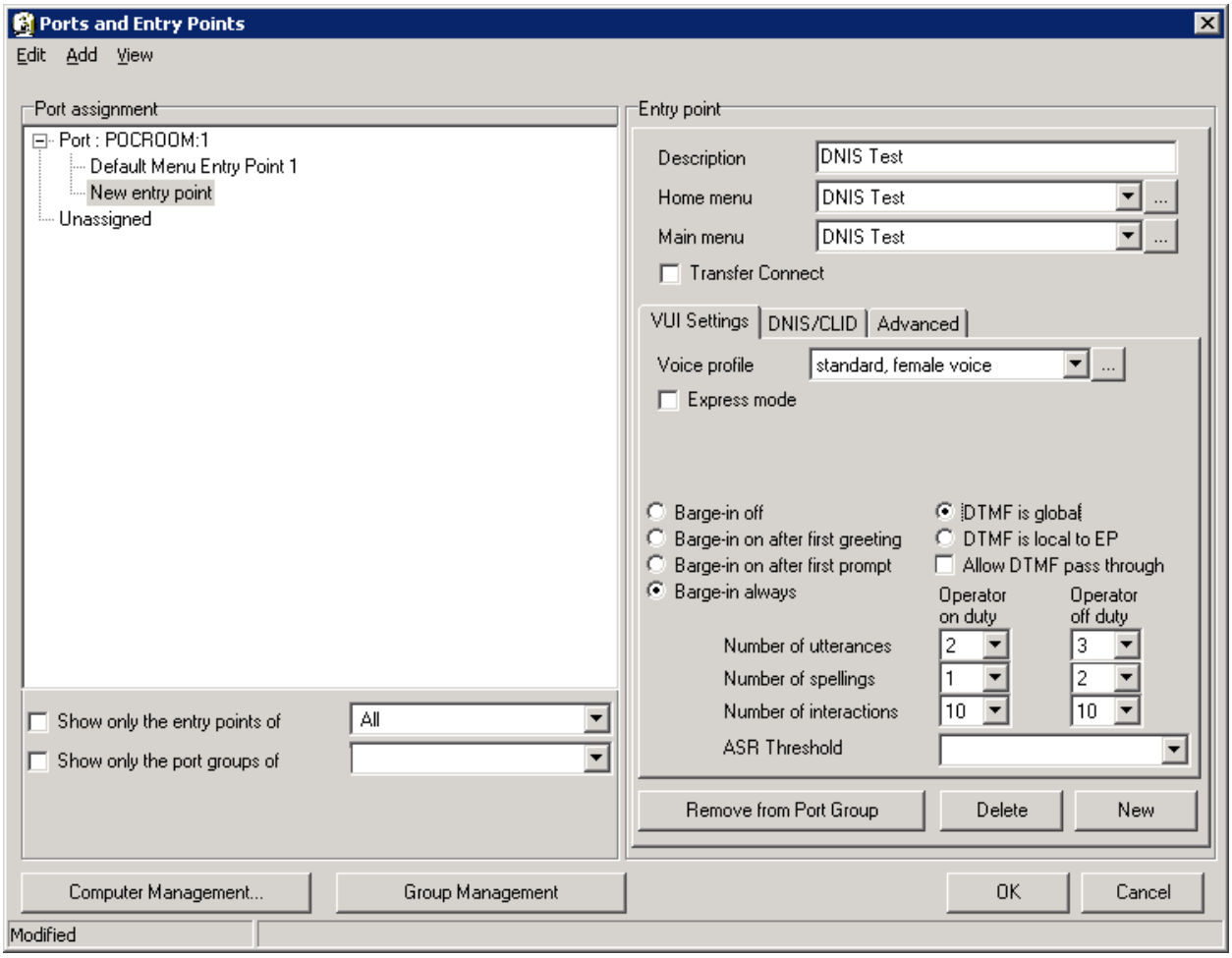


Figure 35: Ports and Entry Points (VUI Settings Tab)

A transfer entry was also added under the DNIS Test top-level menu using the procedure described in Section 5.2.

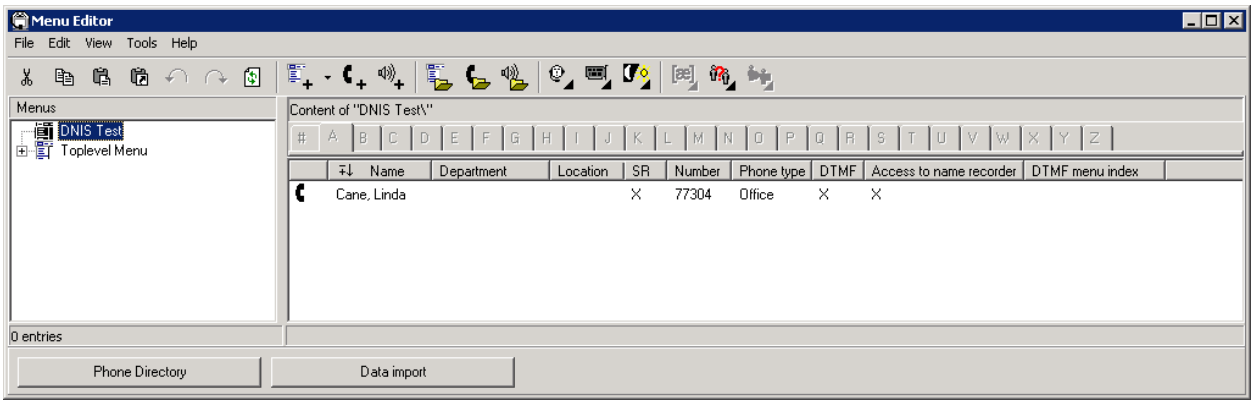


Figure 36: Transfer Entry for DNIS Test Top-Level Menu

5.4. Administer Caller Utterance Recordings

The **Monitor** tool available from the **Admin Tools** window allows a system administrator to listen to caller utterances. To enable the recording of caller utterances, click on **Configuration Panel** in **Admin Tools** shown in **Figure 23** and log in using Level 3 access. Set the **Call Analyzer recorded channels** parameter to *ALL* and set the **Dump output documents enabled** parameter to *ON* (not shown). Apply the changes as described above. Caller utterances can then be retrieved from the **Monitor** tool.

In the `gateway.xml` file located in `C:\SpeechAttendant\OSA\www\WEB-INF\conf` directory of the Nuance OSA server, set the tag `<recordings_recognized_utterance_media_format>` under the Avaya VP 5.1 section to *audio/basic*. The default value is *audio/x-wav*. Restart Nuance OSA from **Admin Tools** to enable the change.

From **Admin Tools**, click on **Monitor** and log in with the appropriate credentials. Click on **Call Logs** in the left pane (not shown) to display a list of calls. Select the call for which you would like to listen to the caller utterance. The caller utterance will be displayed as shown below and may be listened to by clicking on the **play / stop** button.

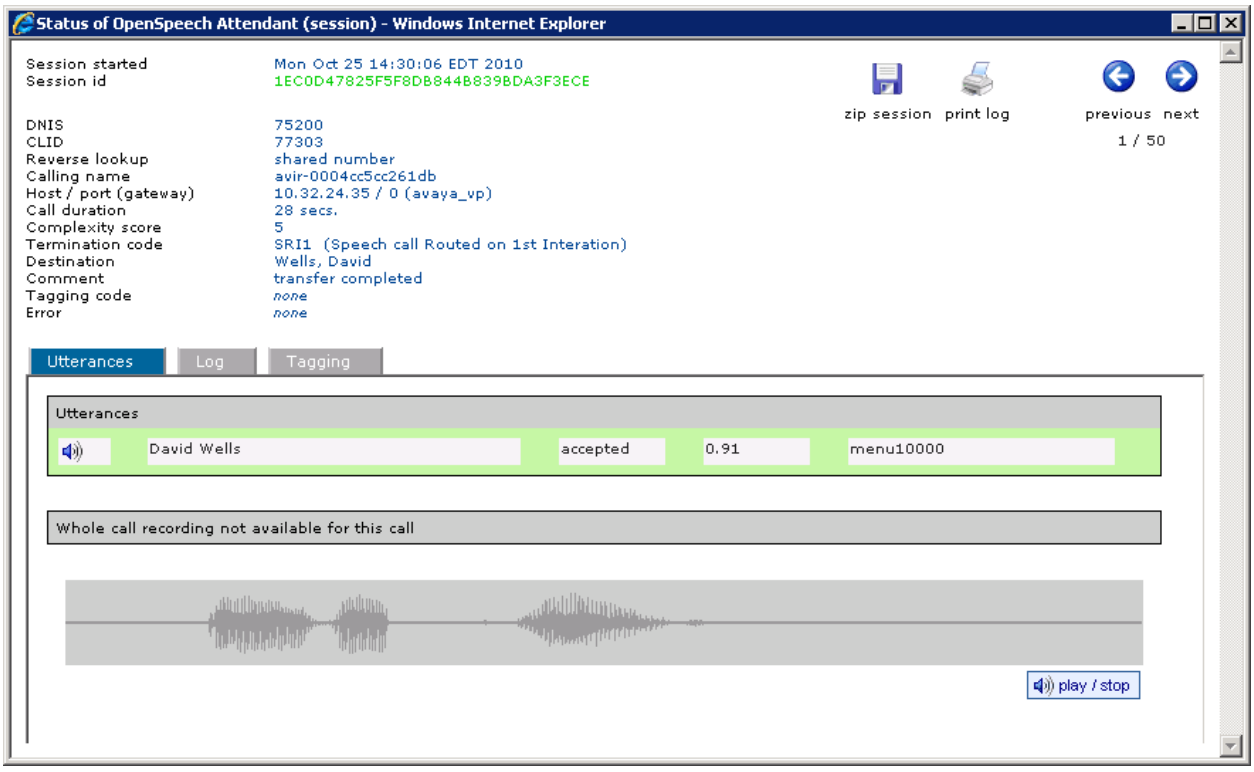


Figure 37: Caller Utterance

6. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. Feature testing focused on Nuance OSA successfully recognizing spoken names and extensions entered via DTMF, and then transferring the call to the correct destination. Blind transfer was verified. Other features covered included barge-in / no barge-in, adding new transfer entries, recording caller utterances, and accessing Maintenance Mode and Personal Administration Mode to record name and change PIN. Avaya IR and the Nuance Speech Server were configured to use MRCPv1.

Serviceability testing focused on verifying the ability of the Nuance OSA to recover from adverse conditions, such as server restarts, power failures, and disconnecting cables to the IP network.

All test cases passed.

7. Verification Steps

This section provides the verification steps that may be performed to verify Nuance OSA with Avaya IR.

1. From the Avaya IR web interface, verify that the Avaya IR channels are in-service as shown in **Figure 22**.

2. From the Avaya Communication Manager SAT, verify that the T1 channels are in-service using the **status station <extension>** as shown in **Figure 38.**

```
status station 23201                                          Page   1 of   4
                            GENERAL STATUS
     Administered Type: DS1FD              Service State: in-service/on-hook
        Connected Type: N/A
             Extension: 23201
                  Port: 01A1101       Parameter Download: not-applicable
          Call Parked? no                  SAC Activated? no
      Ring Cut Off Act? no
Active Coverage Option: 1            one-X Server Status: N/A

          EC500 Status: N/A        Off-PBX Service State: N/A
   Message Waiting:
   Connected Ports:


  Limit Incoming Calls? no

 User Cntrl Restr: none                        HOSPITALITY STATUS
Group Cntrl Restr: none                      Awaken at:
                                              User DND: not activated
                                             Group DND: not activated
                                           Room Status: non-guest room
```

Figure 38: Status Station

3. From the Avaya IR web interface, click on **Display Status** under **Speech and DRP Administration** in the left pane to check the status of the Nuance Speech Server. In the resulting page (not shown), select the **Speech Resource Status** link and then select the **Resource Status** associated with the ASR server associated with the Nuance Speech Server (e.g., OPSR4). Click **Submit**. The following page will be displayed. Check that the ASR ports are *INSERV*.

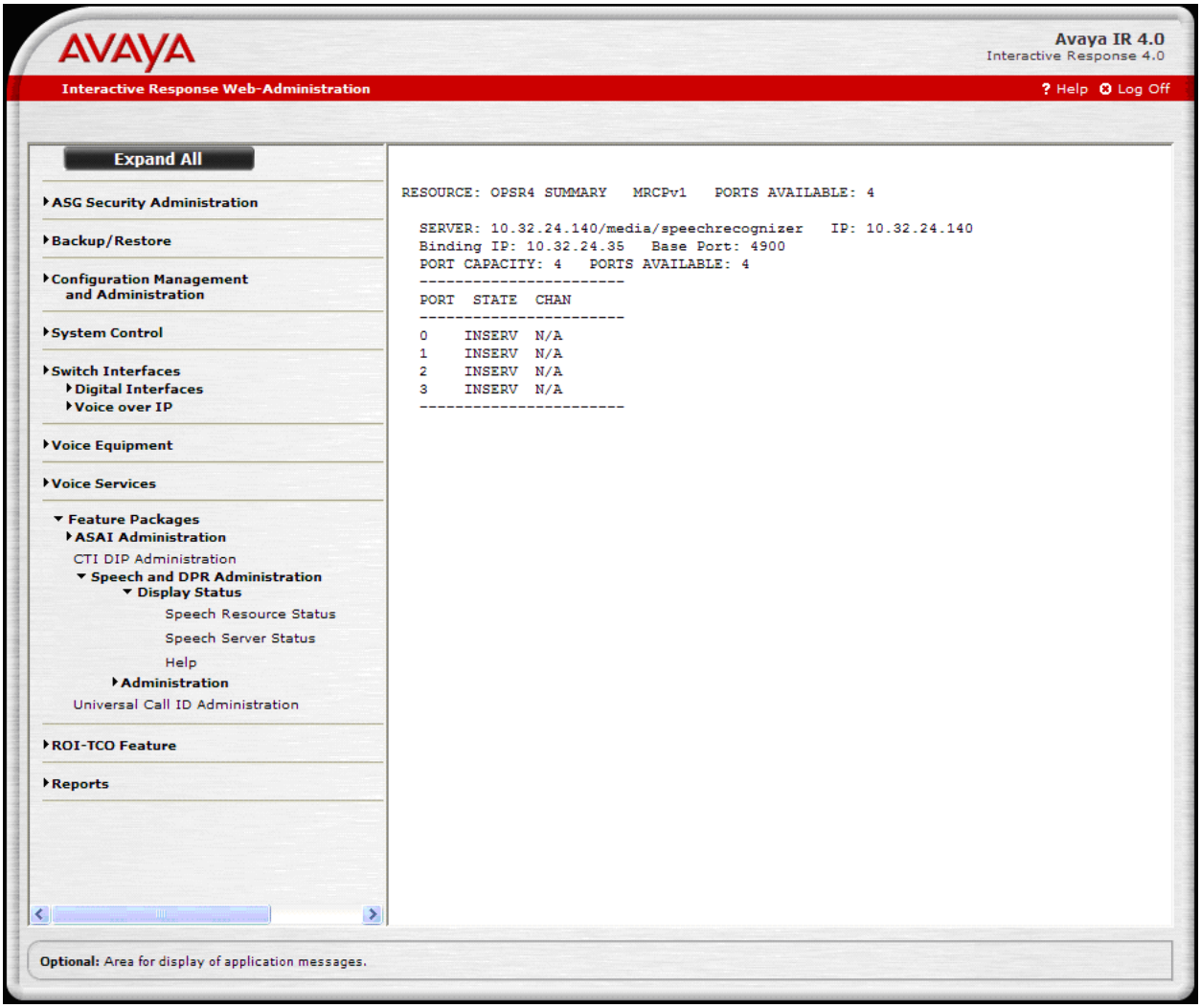


Figure 39: OPSR Status Summary

4. From the Avaya IR web interface, click on **Display Status** under **Speech and DRP Administration** in the left pane to check the status of the TTS ports on the Nuance Speech Server. In the resulting page, select the **Speech Resource Status** link and then select the **Resource Status** associated with the TTS engine associated with the Nuance Speech Server (e.g., TTS0). Click **Submit**. The following page will be displayed. Check that the TTS ports are *INSERV*.

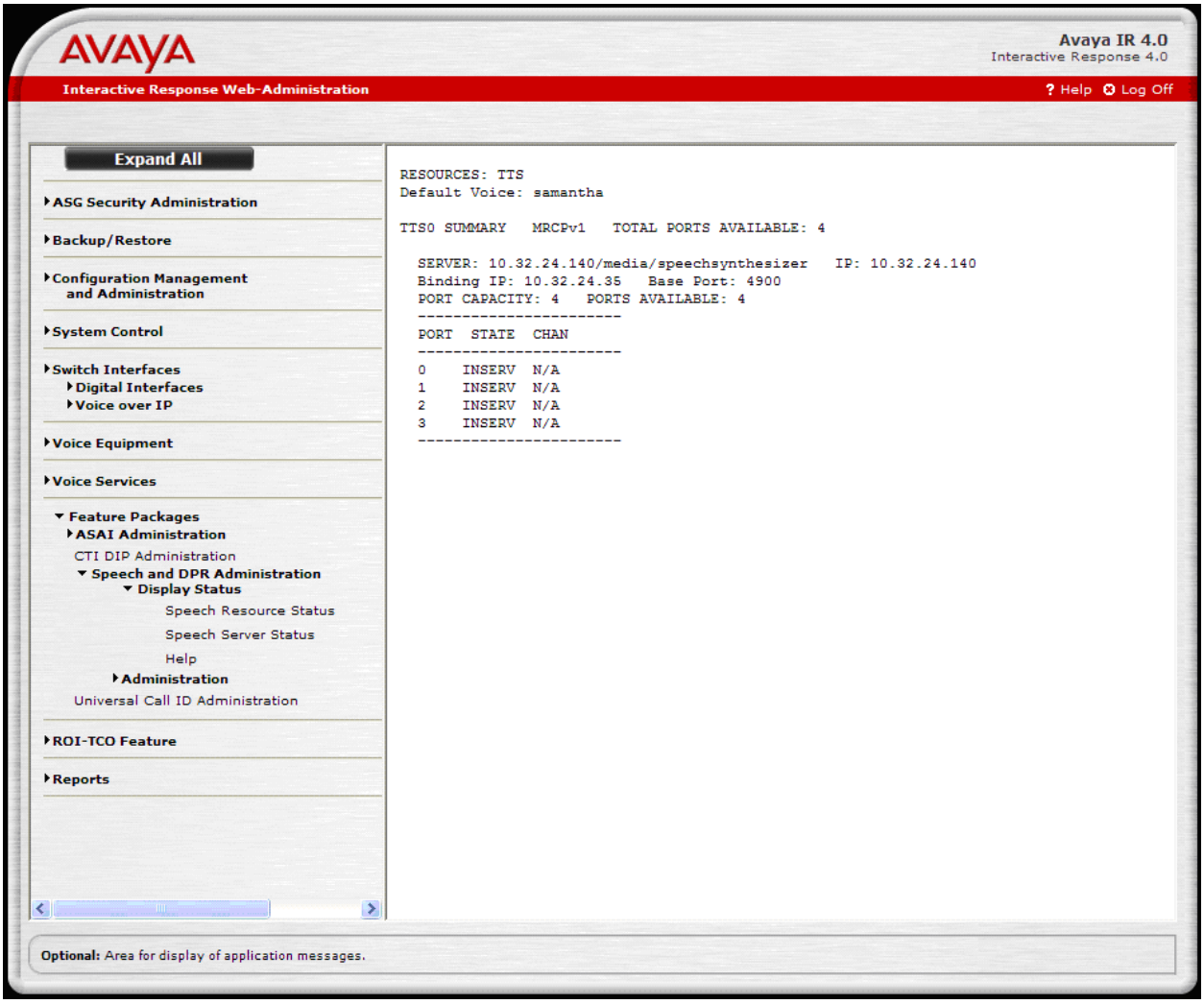


Figure 40: TTS Status Summary

5. Place a call to Avaya IR and verify that the Nuance OSA application answers the call, that the greeting is heard, and that the application is able to recognize the speech and DTMF tones provided by the caller and transfer the call to the correct destination.

6. From **Admin Tools** on Nuance OSA, start the **Monitor** to verify that an active call is detected as shown in **Figure 41**.

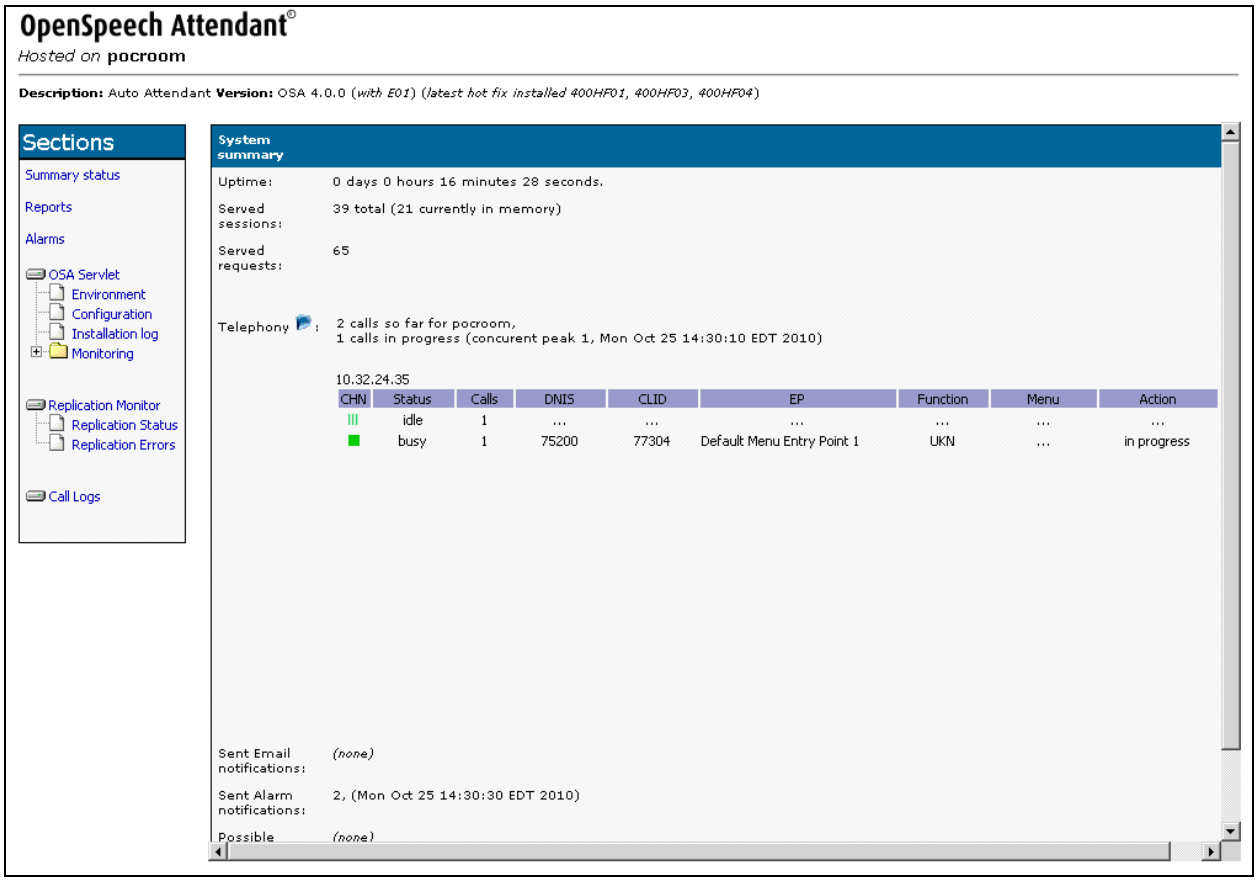
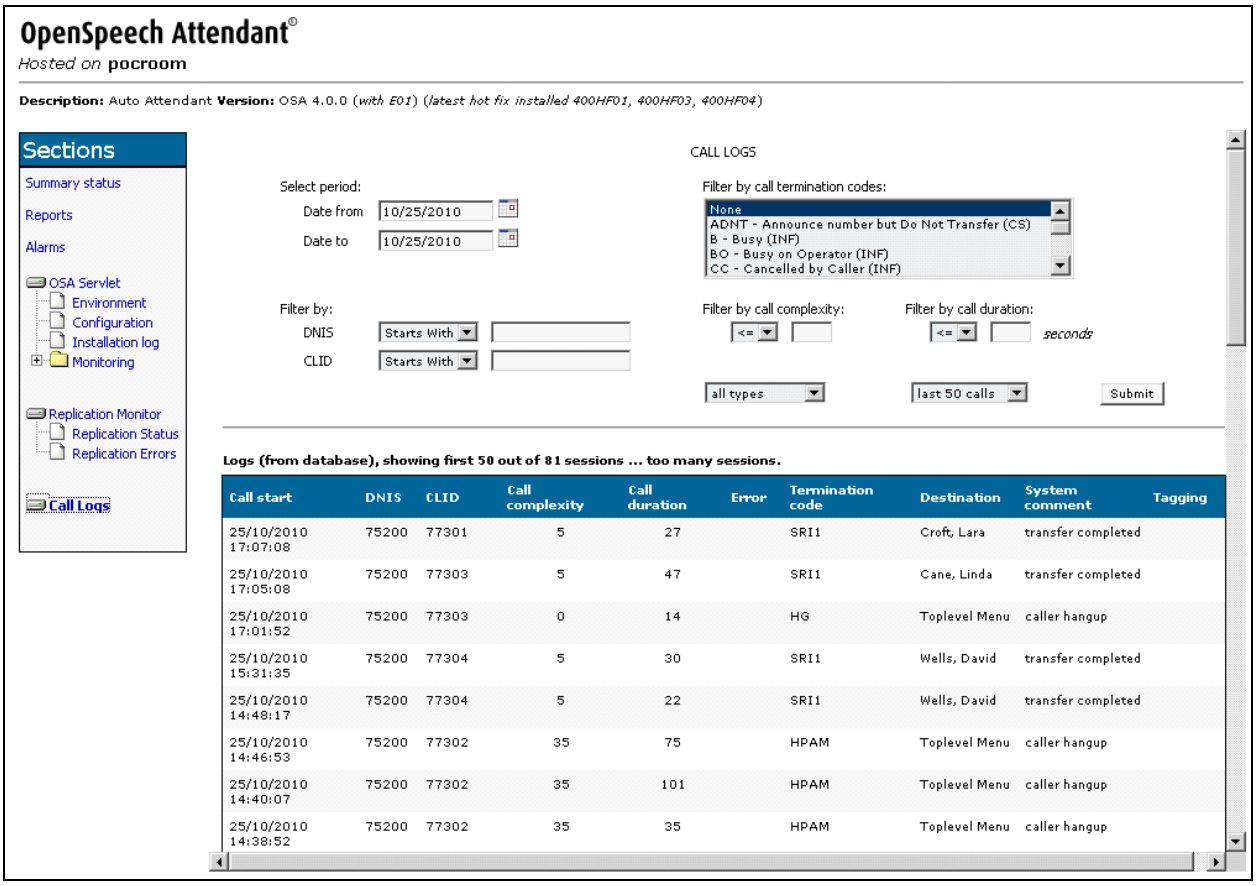


Figure 41: OSA Monitor

7. From the OSA Monitor, click on **Call logs** in the left pane. Verify that the call log shown in **Figure 42** is displayed with the correct call information and status.



Call start	DNIS	CLID	Call complexity	Call duration	Error	Termination code	Destination	System comment	Tagging
25/10/2010 17:07:08	75200	77301	5	27		SRI1	Croft, Lara	transfer completed	
25/10/2010 17:05:08	75200	77303	5	47		SRI1	Cane, Linda	transfer completed	
25/10/2010 17:01:52	75200	77303	0	14		HG	Toplevel Menu	caller hangup	
25/10/2010 15:31:35	75200	77304	5	30		SRI1	Wells, David	transfer completed	
25/10/2010 14:48:17	75200	77304	5	22		SRI1	Wells, David	transfer completed	
25/10/2010 14:46:53	75200	77302	35	75		HPAM	Toplevel Menu	caller hangup	
25/10/2010 14:40:07	75200	77302	35	101		HPAM	Toplevel Menu	caller hangup	
25/10/2010 14:38:52	75200	77302	35	35		HPAM	Toplevel Menu	caller hangup	

Figure 42: Call Log

8. Support

To obtain technical support for Nuance OpenSpeech Attendant, contact Nuance via email or through their website.

- **Web:** www.network.nuance.com
- **Email:** SpeechAttendant.Support@nuance.com
- **Phone:** (866) 434-2564 or (514) 390-3922

9. Conclusion

These Application Notes describe the configuration steps required to integrate Nuance OpenSpeech Attendant with Avaya Interactive Response (IR) using MRCPv1. All feature and serviceability test cases were completed successfully.

10. Additional References

This section references the product documentation that is relevant to these Application Notes.

[1] *Administering Avaya Aura™ Communication Manager*, Release 6.0, Document 03-300509, Issue 6.0, June 2010, available at http://support.avaya.com.

[2] *Avaya Aura™ Communication Manager Feature Description and Implementation,* Release 6.0, Document 555-245-205, Issue 8.0, June 2010, available at http://support.avaya.com.

[3] *Avaya Interactive Response 4.0 Administration Guide*, December 2008, available at http://support.avaya.com.

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 DevConnect Program at devconnect@avaya.com.