Avaya Solution & Interoperability Test Lab

Application Notes for Nuance OpenSpeech Attendant with Avaya Voice Portal – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate the Nuance OpenSpeech Attendant with Avaya Voice Portal 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. In addition, the caller may dial an extension number to transfer to the requested party.

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 Voice Portal 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. In addition, the caller may dial an extension number to transfer to the requested party.

1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. Feature testing focused on Nuance OpenSpeech Attendant (OSA) successfully recognizing spoken names and extensions entered via DTMF and transfer the call to the correct destination. Blind, supervised, and bridged 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.

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.

Note: Nuance OSA was tested with Avaya Voice Portal using an H.323 and SIP integration. The Avaya Voice Portal SIP integration used Avaya Aura™ SIP Enablement Services 5.2.1. These Application Notes cover the configuration of Avaya Voice Portal using the H.323 integration.

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 Voice Portal, Avaya Aura^{TM} Communication Manager, and the Nuance Speech Server. Nuance OSA is deployed on a dedicated application server running Windows 2003 Server. Avaya Voice Portal interfaces to Avaya Aura^{TM} Communication Manager using a VoIP H.323 interface. Avaya Voice Portal manages the interactions with speech server resources (i.e., speech recognition and text-to-speech) using VXML applications. VXML pages generated by Nuance OSA are loaded and interpreted by Avaya Voice Portal, which controls the interaction with the user. To access the Nuance OSA application, a VoIP channel on Avaya Voice Portal must be configured to invoke the VXML application when an incoming call is received on that channel.

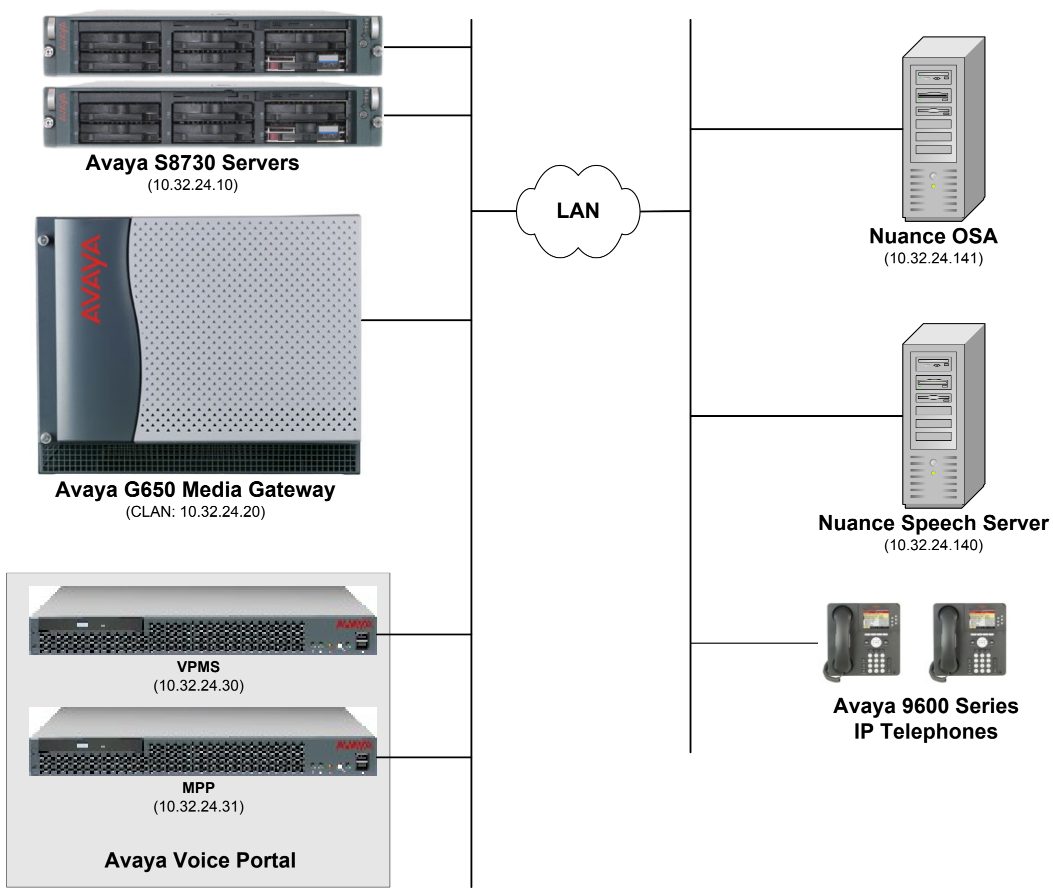


Figure 1: Configuration with Avaya Voice Portal and Nuance OpenSpeech Attendant

2.1. Equipment and Software Validated

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

Equipment	Software
Avaya Voice Portal	5.1 (5.1.0.0.4201)
Avaya S8730 Servers with a G650 Media Gateway	Avaya Aura™ Communication Manager 5.2 (R015x.02.0.947.3) with Service Pack 3 (Patch 17579)
Avaya 9600 Series IP Telephones	3.0 (H.323)
Nuance OpenSpeech Attendant (OSA)	4.0
Nuance Speech Server • Nuance License Manager • Nuance Speech Server • Nuance Recognizer • Nuance Vocalizer Network	 11.1.0 5.1.1 9.0.12 5.0.0

3. Configure Avaya Aura™ Communication Manager

This section describes the configuration of H.323 stations and the IP codec set for Voice Portal. This configuration also requires a C-LAN and Media Processor board for IP communication. This configuration is outside the scope of these application notes, but the reader may refer to [1] and [2] for additional information.

Note: Special application SA8874 – Call Status Messages for 7434ND IP Softphone is required to support supervised transfers from Voice Portal.

From the System Access Terminal (SAT), add an H.323 station for Voice Portal. A call to this station will terminate to Voice Portal which will invoke the Nuance OSA application. In the station form, set the **Type** to *7434ND*, set the **Port** field to *IP*, provide a descriptive **Name**, set the **Security Code**, and set the **IP Softphone** field to *y*.

```
add station 23802                                            Page   1 of   6
                                     STATION

Extension: 23802                         Lock Messages? n              BCC: 0
     Type: 7434ND                        Security Code: XXXXX           TN: 1
     Port: IP                          Coverage Path 1:                COR: 1
     Name: VP 192.45.122.50            Coverage Path 2:                COS: 1
                                       Hunt-to Station:
STATION OPTIONS
                                           Time of Day Lock Table:
              Loss Group: 2          Personalized Ringing Pattern: 1
             Data Module? n                      Message Lamp Ext: 23802
          Display Module? y
        Display Language: english                  Coverage Module? n

          Survivable COR: internal               Media Complex Ext:
   Survivable Trunk Dest? y                            IP SoftPhone? y

                                                 IP Video Softphone? n
```

Figure 2: Station Form

In the IP codec set form associated with the IP network region of the H.323 station, configured in **Figure** 2, set the **Audio Codec** field to the appropriate value. In this configuration, *G.711MU* was used.

```
change ip-codec-set 1                                           Page   1 of   2
                          IP Codec Set

    Codec Set: 1

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

Figure 3: IP Codec Set Form

4. Configure Avaya Voice Portal

This section covers the administration of Voice Portal. The following Voice Portal configuration steps will be covered:

- Configuring an H.323 VoIP connection
- Adding an MPP server
- Configuring the VoIP audio format (mu-law or a-law)
- Adding a speech server
- Adding applications
- Starting the MPP server

Voice Portal is configured via the Voice Portal Management System (VPMS) web interface. To access the web interface, enter *http://<ip-addr>/VoicePortal* as the URL in an internet browser, where *<ip-addr>* is the IP address of the VPMS. Log in using the Administrator user role. The screen shown in
Figure 4 is displayed.

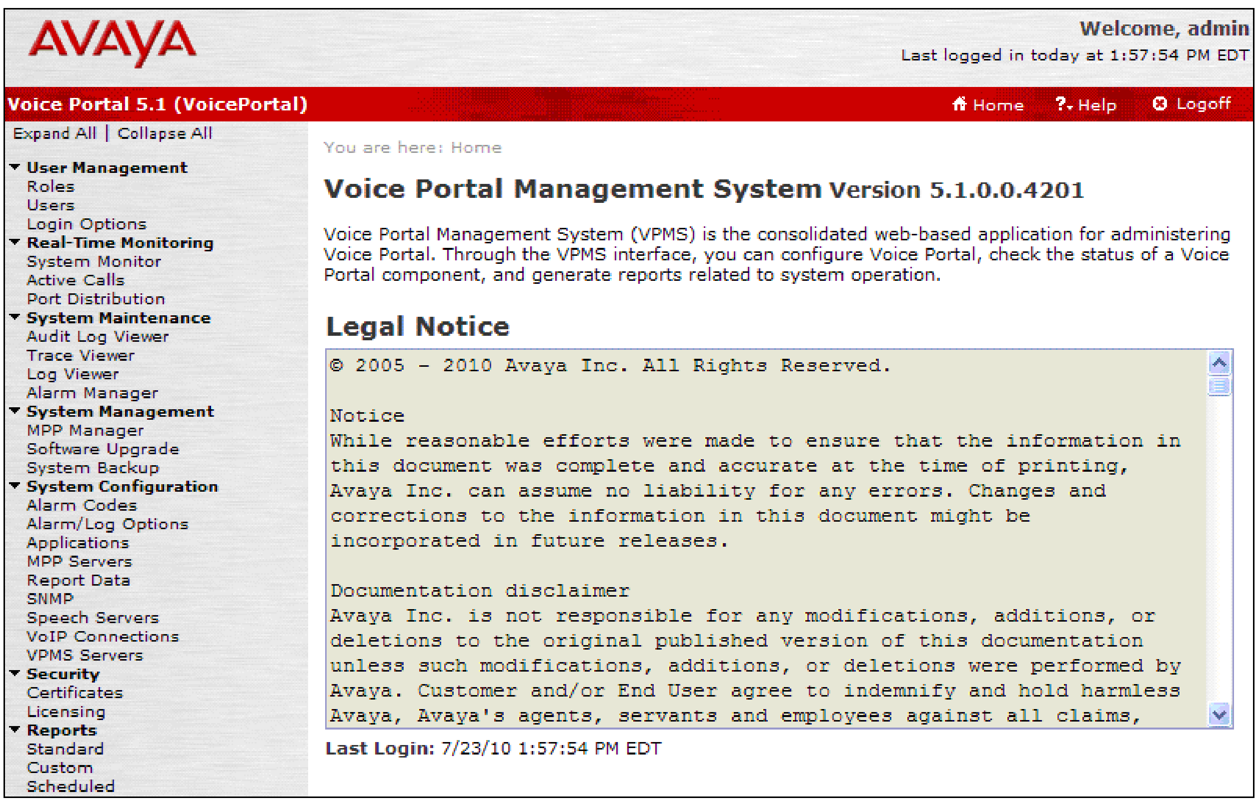


Figure 4: VPMS Main Screen

4.1. Configure the H.323 VoIP Connection

To configure an H.323 connection, navigate to the **VoIP Connections** page and then click on the **H.323** tab. Click on the **Add** button. In the **Add H.323 Connection** page, set the **Gatekeeper Address** to the IP address of the C-LAN in the G650 media gateway and the **Gatekeeper Port** to *1719*. Next, configure the stations for Voice Portal, which map to the 7434ND stations configured in Communication Manager. In addition, set the **Password** for the stations and set the **Station Type** to *Inbound and Outbound*. Click the **Add** button when done. In this configuration, stations 23801 to 23808 are assigned to Voice Portal. However, only stations 23802 and 23803 are mapped to the Nuance OSA application on Voice Portal in **Figure** 10. Click **Save**.

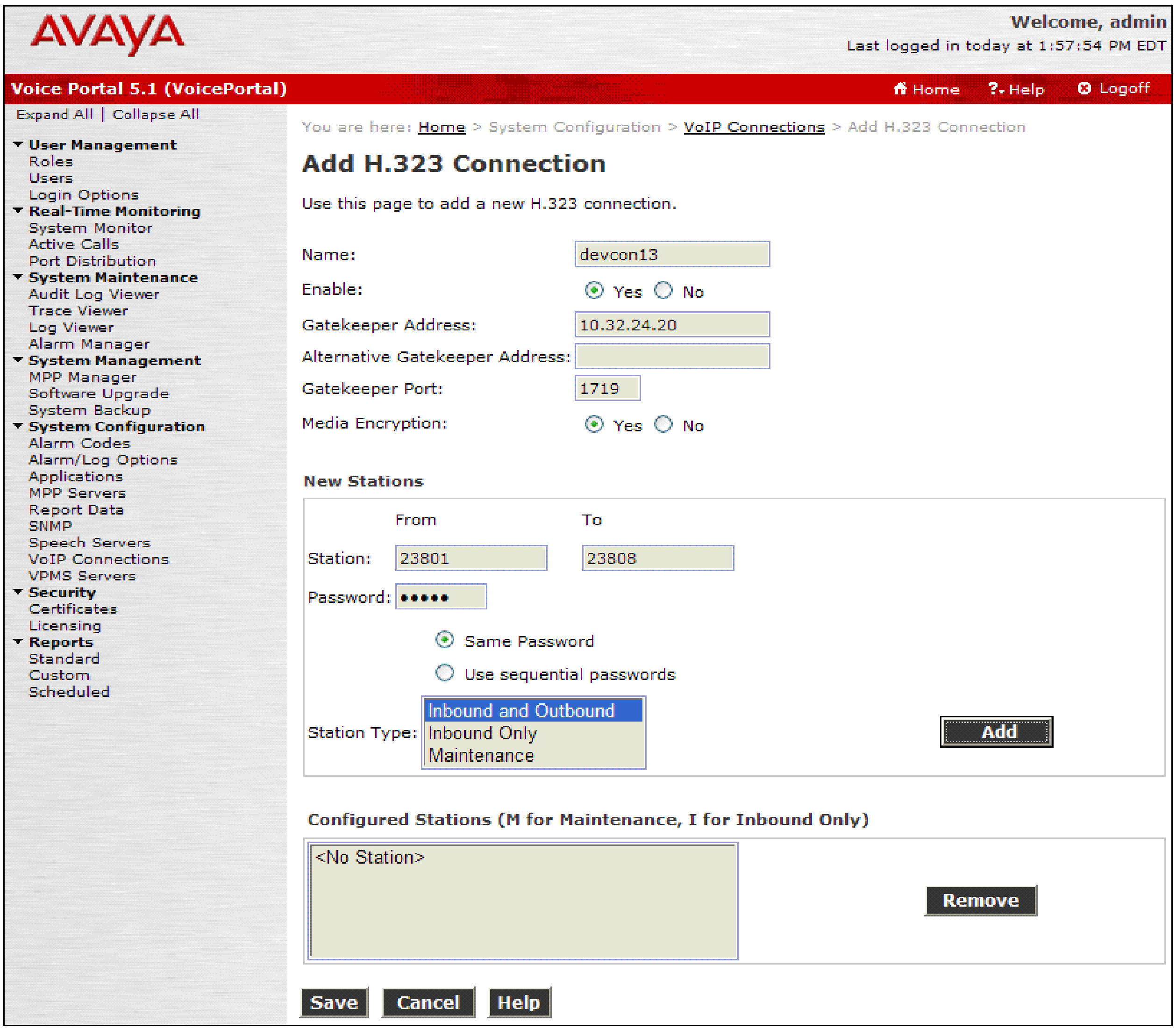


Figure 5: H.323 Connection

4.2. Add an MPP Server

Add the MPP server by navigating to the **MPP Servers** screen and selecting the option from the left pane. In the MPP Server configuration page, specify a descriptive **Name** and the **Host Address** of the MPP server. Also, specify the **Maximum Simultaneous Calls** supported by the MPP server. The previously configured MPP server is shown below.

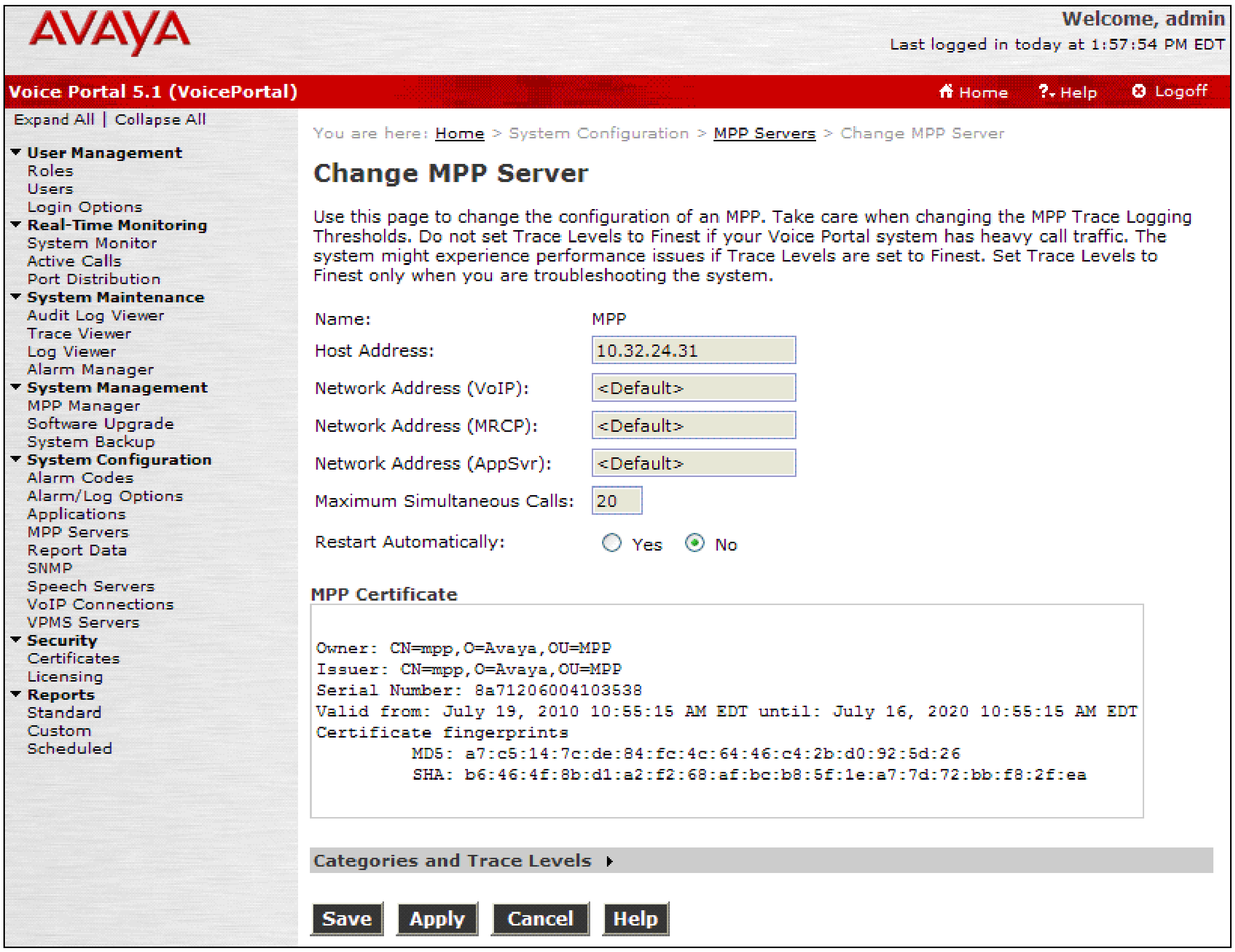


Figure 6: MPP Server

4.3. Configure the VoIP Audio Format

The **VoIP Audio Format** for the MPP server is configured in the **VoIP Settings** screen accessible by selecting **MPP Servers** in the left pane. Click on the **VoIP Settings** button. In the **VoIP Settings** screen, set the **MPP Native Format** field to *audio/basic* for mu-law as shown in **Figure** 7. Click **Save**.

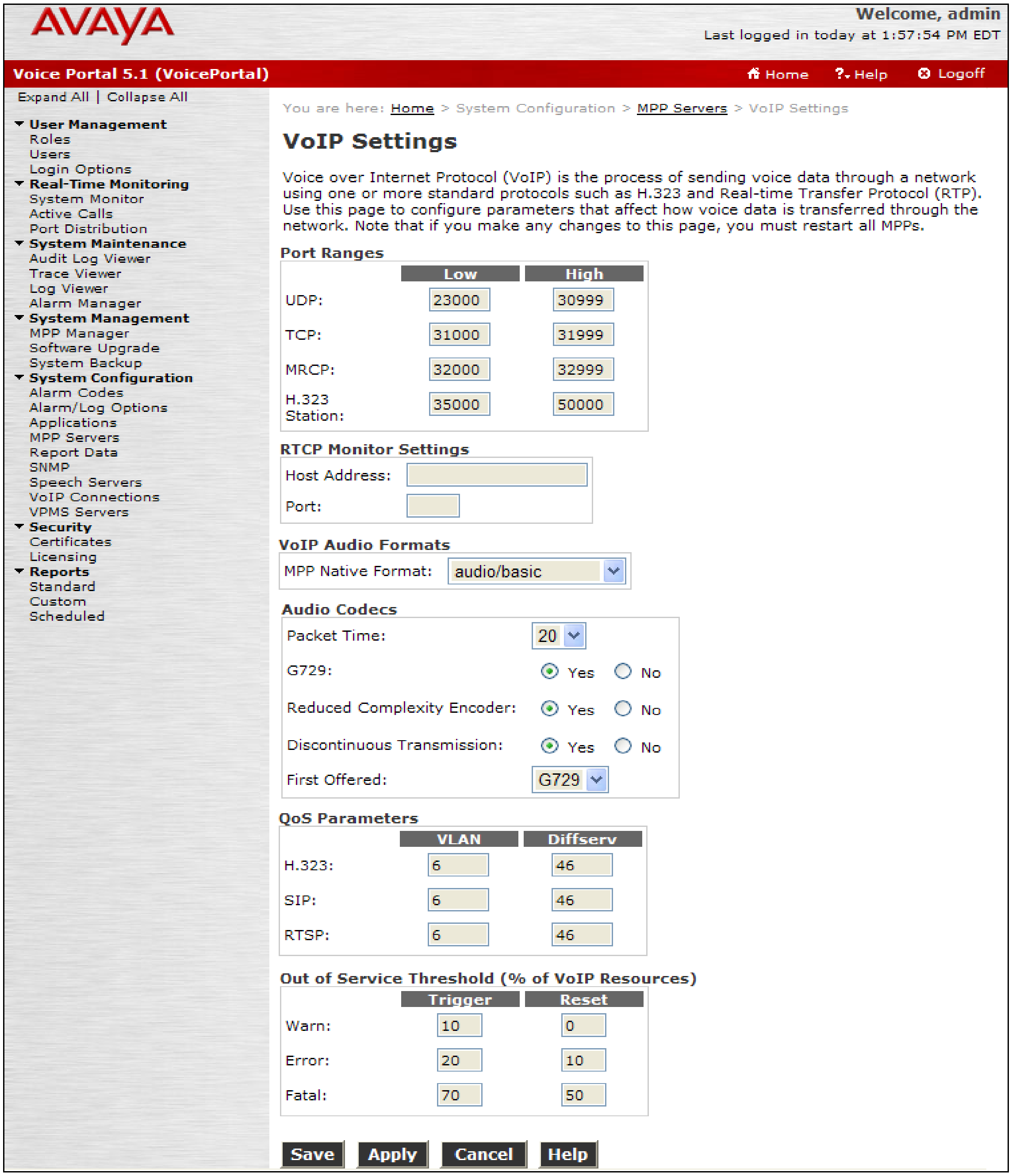


Figure 7: VoIP Settings

4.4. Add an ASR Server

To configure the ASR (automatic speech recognition) server, click on **Speech Servers** in the left pane, select the **ASR** tab, and then click **Add**. For a Nuance Speech Server, the **Engine Type** should be set to *Nuance*. Set the **Network Address** field to the IP address of the Nuance Speech Server and select the desired **Languages** supported by the application. The **Total Number of Licensed ASR Resources** should also be set to the appropriate value. Set the **Protocol** field to *MRCP V2*. The other fields were left at their default values. Click **Save**.

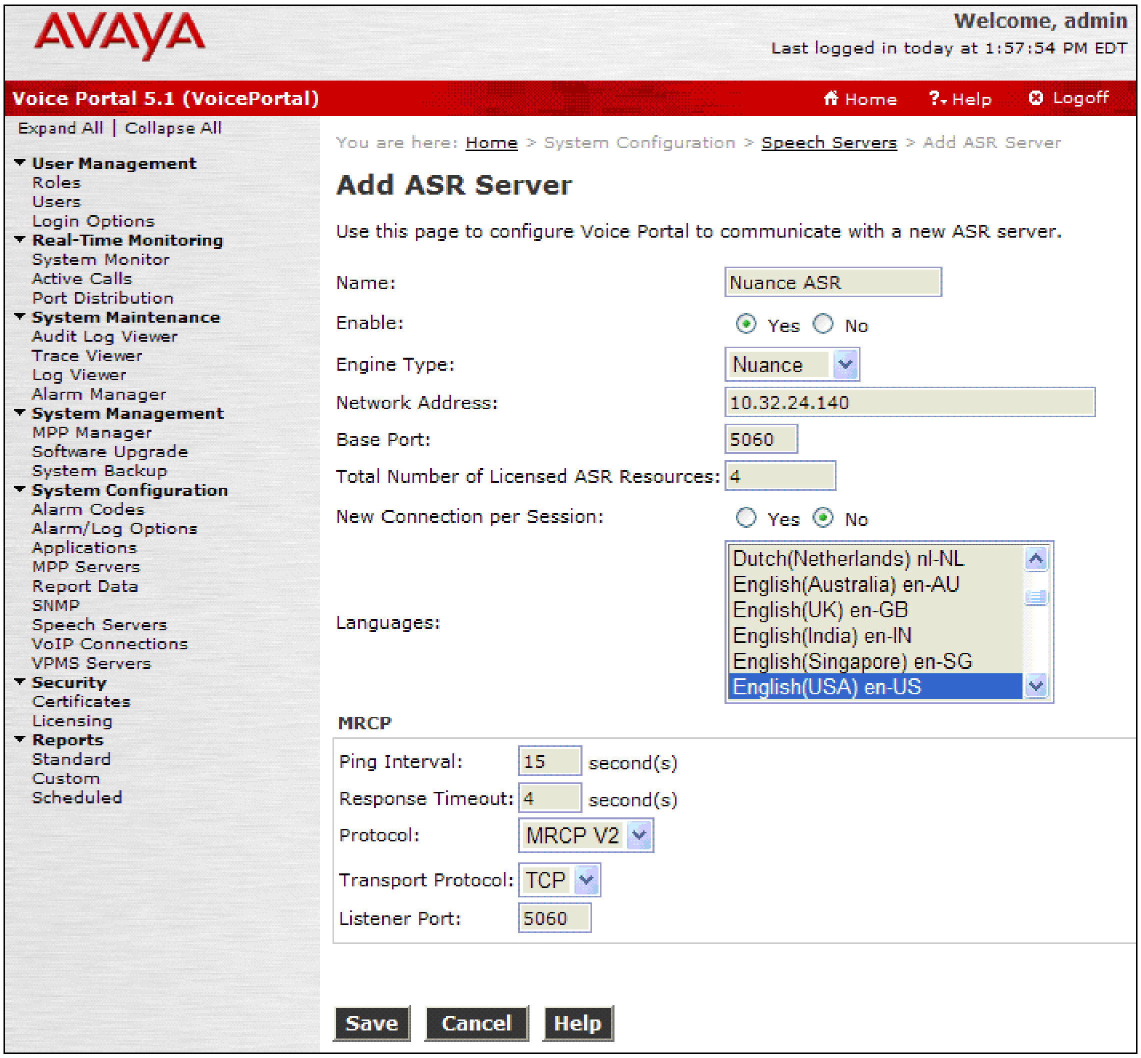


Figure 8: ASR Speech Server

4.5. Add a TTS Server

To configure the TTS (text to speech) server, click on **Speech Servers** in the left pane, select the **TTS** tab, and then click **Add**. For a Nuance Speech Server, the **Engine Type** should be set to *Nuance*. Set the **Network Address** field to the IP address of the Nuance Speech Server and select the desired **Voices** supported by the application. The **Total Number of Licensed TTS Resources** should also be set to the appropriate value. Set the **Protocol** field to *MRCP V2*. The other fields were left at their default values. Click **Save**.

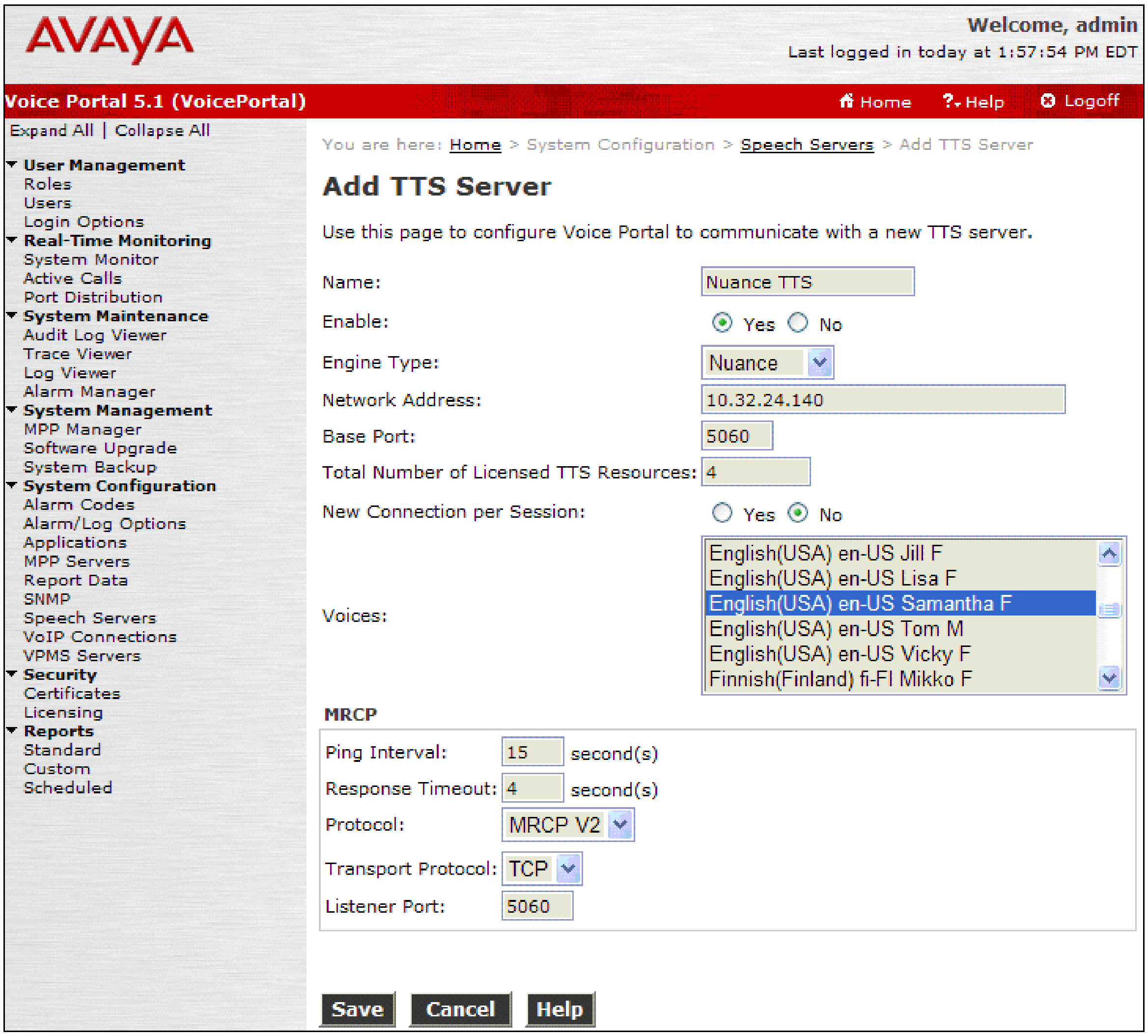


Figure 9: TTS Server

4.6. Add an Application

On the **Applications** page, add a Voice Portal application. Specify a **Name** for the application, set the **Type** field to *VoiceXML*, and set the **VoiceXML URL** field to point to the Nuance OSA application. Next, specify the type of ASR and TTS servers to be used by the application and the called numbers that invoke the Nuance OSA application. The called number 23802 is used to access the "top-level menu" entry point and the called number 23803 is used to access the "DNIS Test" entry point. The **Applications** screen is shown in
Figure 10. Click **Save**.

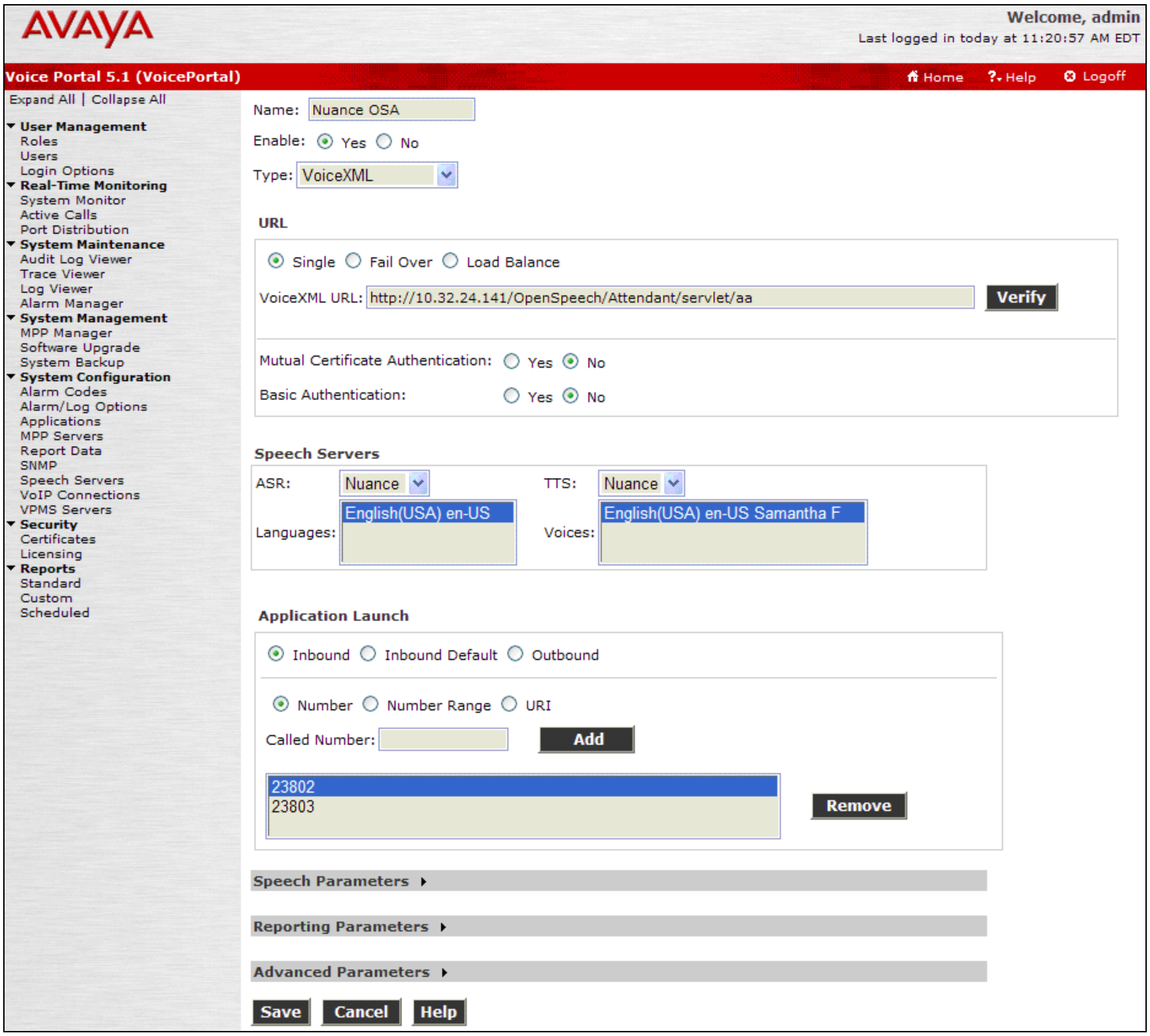


Figure 10: Applications

4.7. Start the MPP Server

Start the MPP server from the **MPP Manager** page shown in **Figure** 11. Select the MPP and then click the **Start** button. After the MPP is started, the **Mode** of the MPP should be *Online*, the **State** should be *Running*, and **Config** should be *OK*.

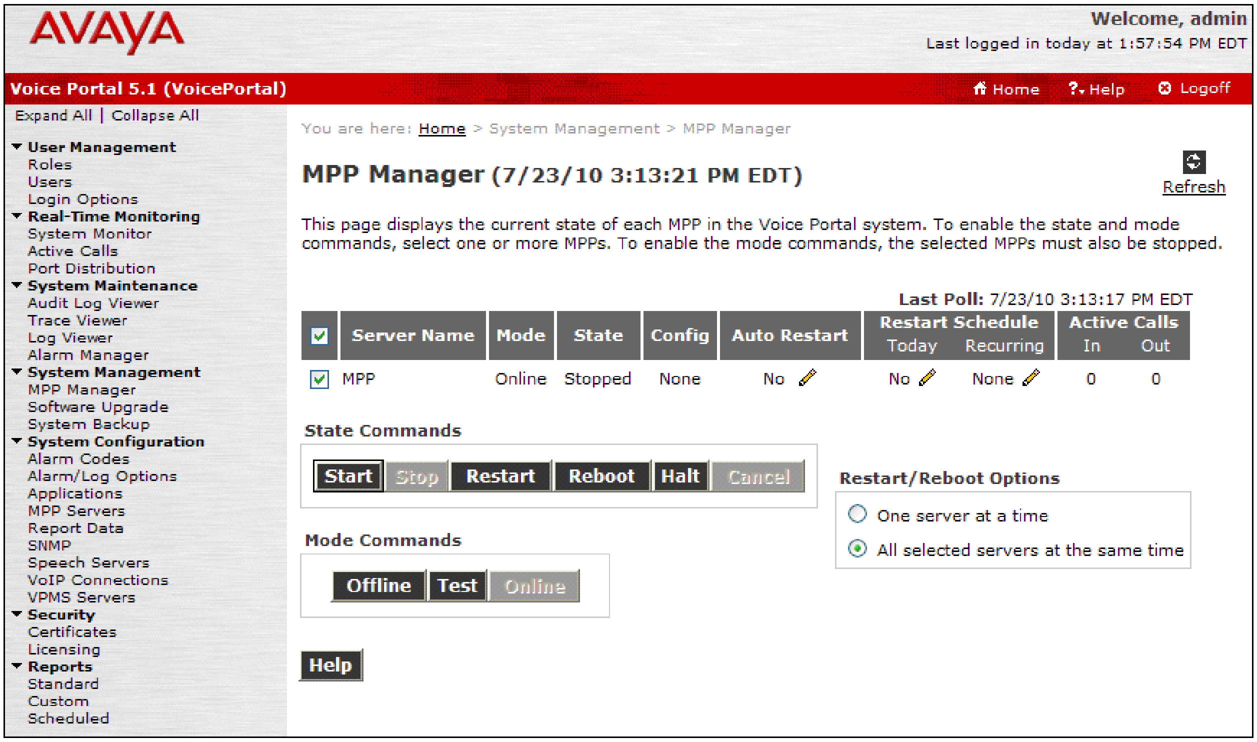


Figure 11: MPP Manager

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 recording

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** 12.

Figure 12: 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** 12. The login prompt will be displayed to the user as shown in **Figure** 13. Log in with the appropriate credentials using *Level 2* access level.

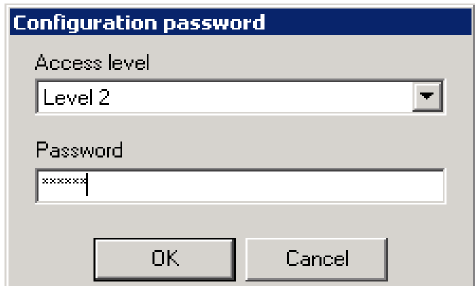


Figure 13: Configuration Panel Login Window

The **Configuration Panel** shown in Figure 14 is displayed. The **Configuration Panel** allows the transfer mode and operator extension number to be configured. Nuance OSA supports blind, supervised, and bridged transfers with Voice Portal. To enable OSA for blind transfers, set the **Gateway Transfer Mode Supervised** and **Gateway Transfer Mode Bridged** fields to *NO* as shown in the figure below. For supervised and bridged transfers set the corresponding fields to *YES*. The **Operator Extension Number** field should be set to a valid extension on Communication Manager. Click **Apply**.

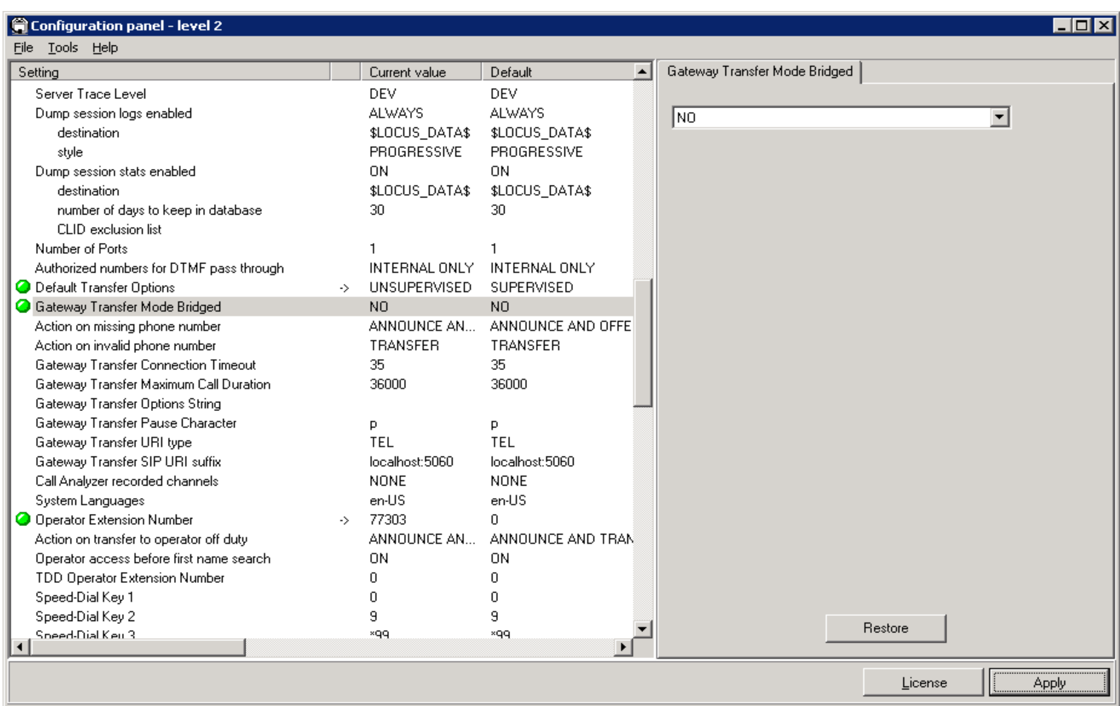


Figure 14: Configuration Panel

Note: To support supervised transfers, the special application SA8874 – Call Status Messages for 7434ND IP Softphone must be enabled on Communication Manager. When using supervised transfers, the caller won't hear any ringing during the transfer attempt.

Next, close the **Configuration Panel**. Activate the changes when prompted by the system as shown
Figure 15.

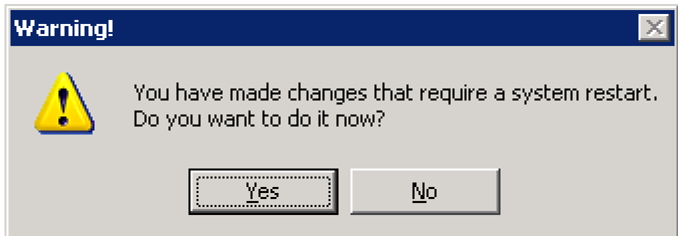


Figure 15: Activate Changes in Configuration Panel

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

Figure 16: 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 17 is displayed.

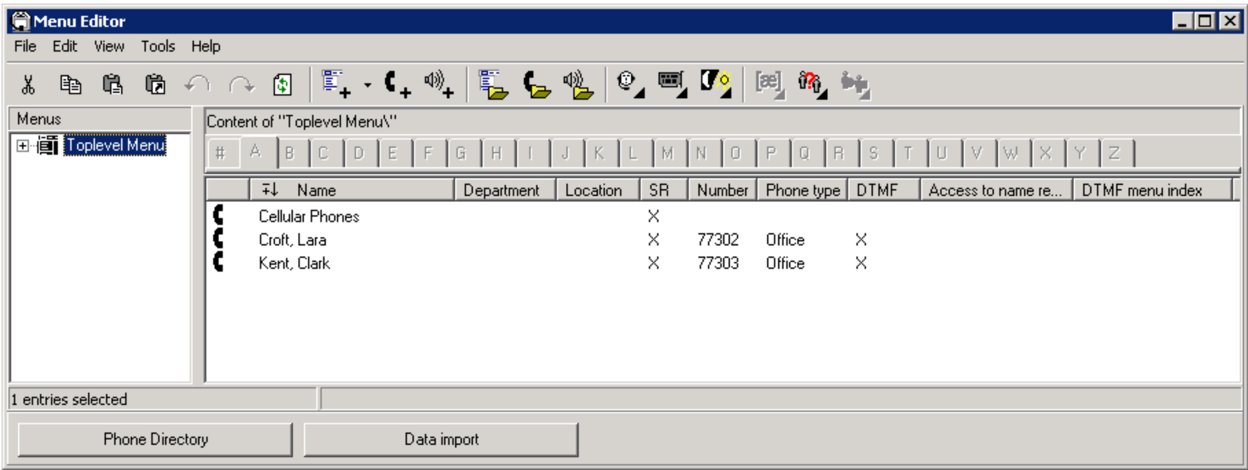


Figure 17: Phone Directory and Menu Editor

Next, select **File→New→Transfer Entry** from the menu options. The **Creating transfer entry** window is displayed as shown in
Figure 18. 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** field so that this user can access the Personal Administration Mode (PAM) to change their name recording. Click **OK**.

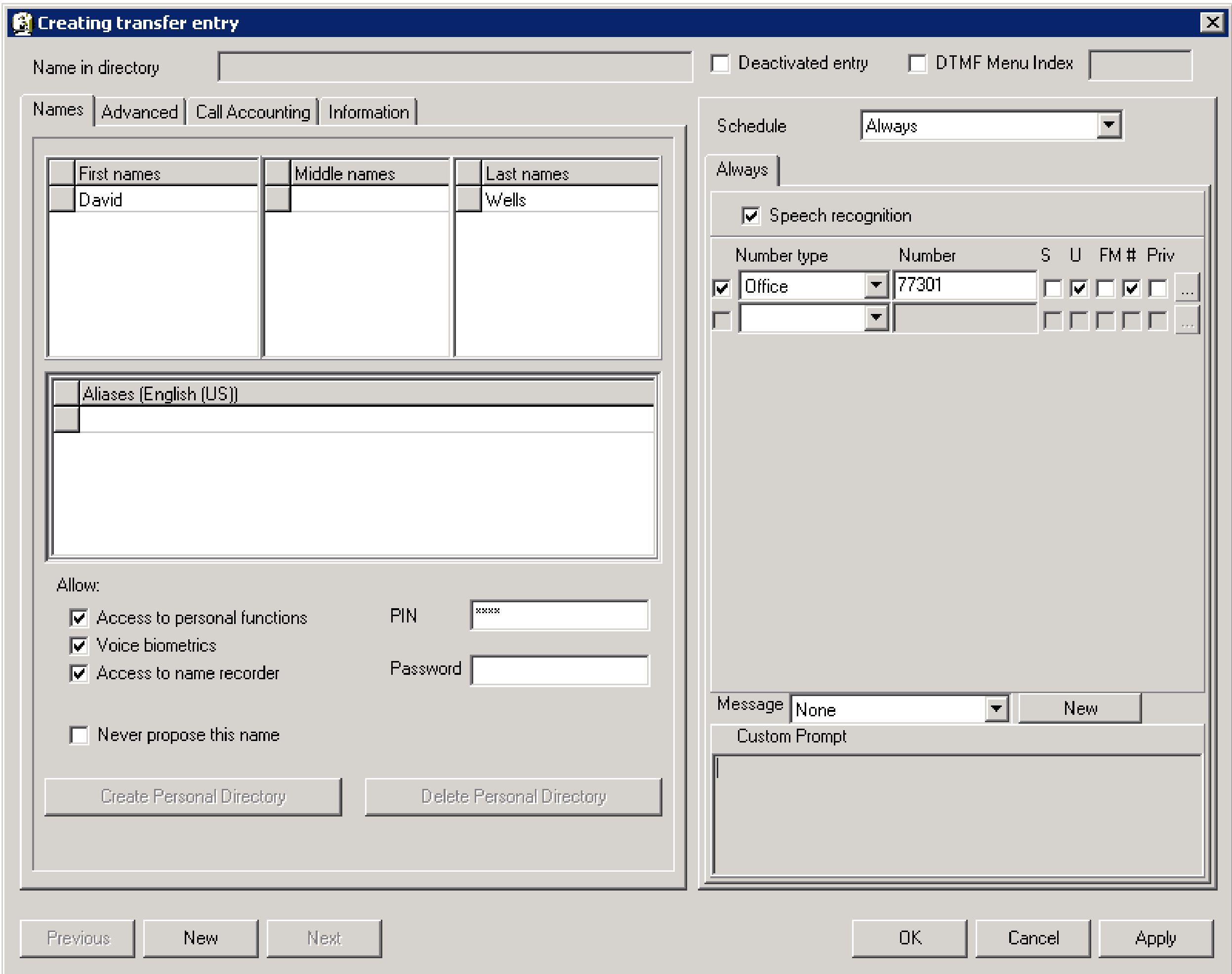
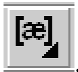


Figure 18: Creating Transfer Entry

The new transfer entry is now displayed in the Menu Editor window, but the entry has not been activated yet. Highlight the new transfer entry and then click on the **Activate Changes** icon .

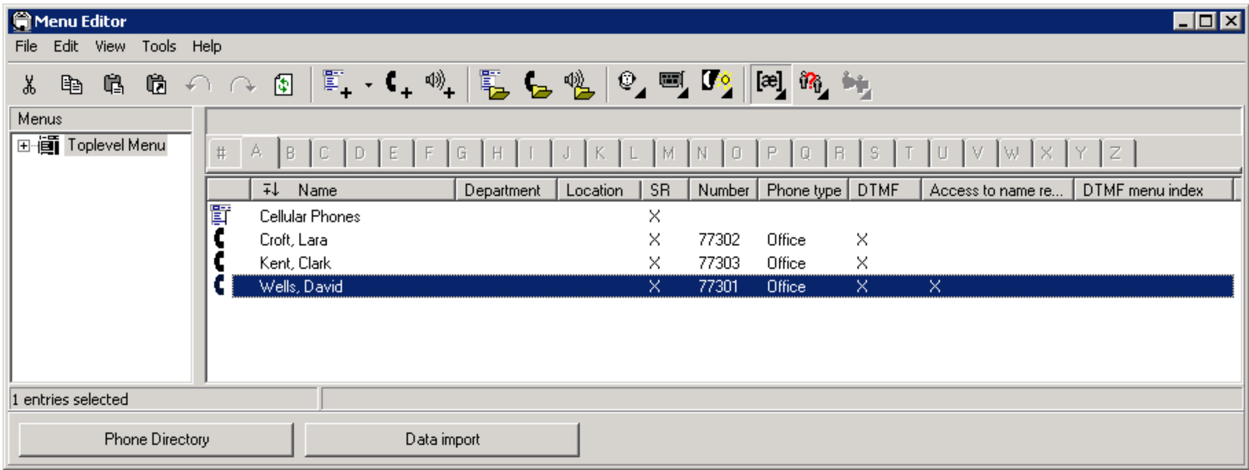


Figure 19: Menu Editor with New Transfer Entry

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

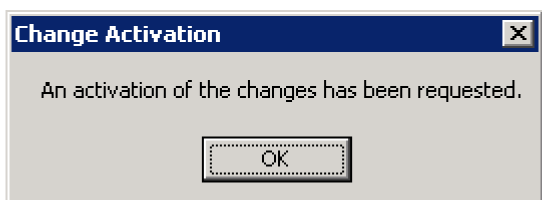


Figure 20: Change Activation

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 configured using a 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 21 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** to activate the changes.

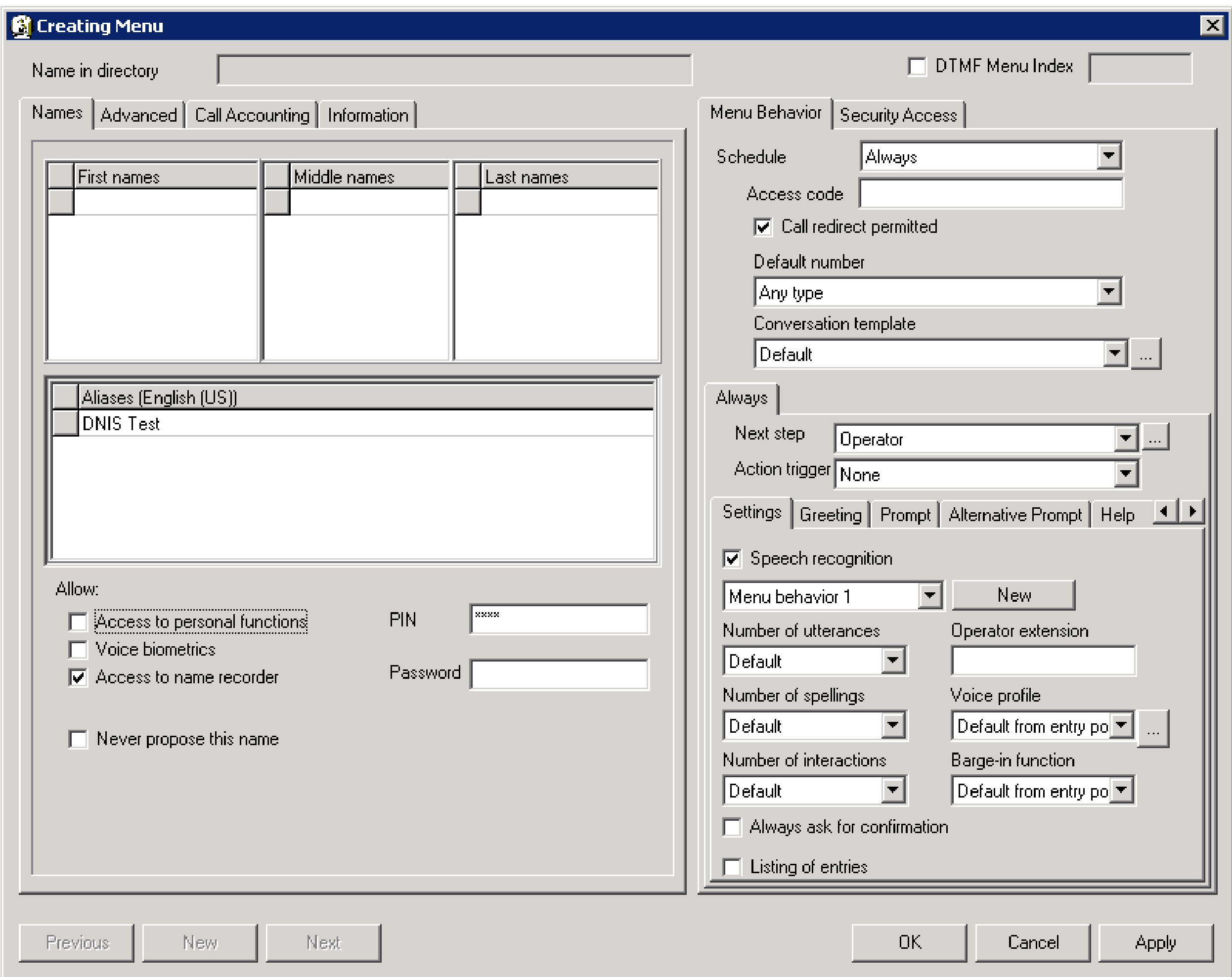


Figure 21: Creating Menu

From the **Menu Editor**, navigate to **Edit→Ports and Entry Points** to display the window in **Figure** 22. Select the first item under **Port assignment** in the left pane and then select **Add→Entry Point** from the menu options.
Figure 23 is displayed.

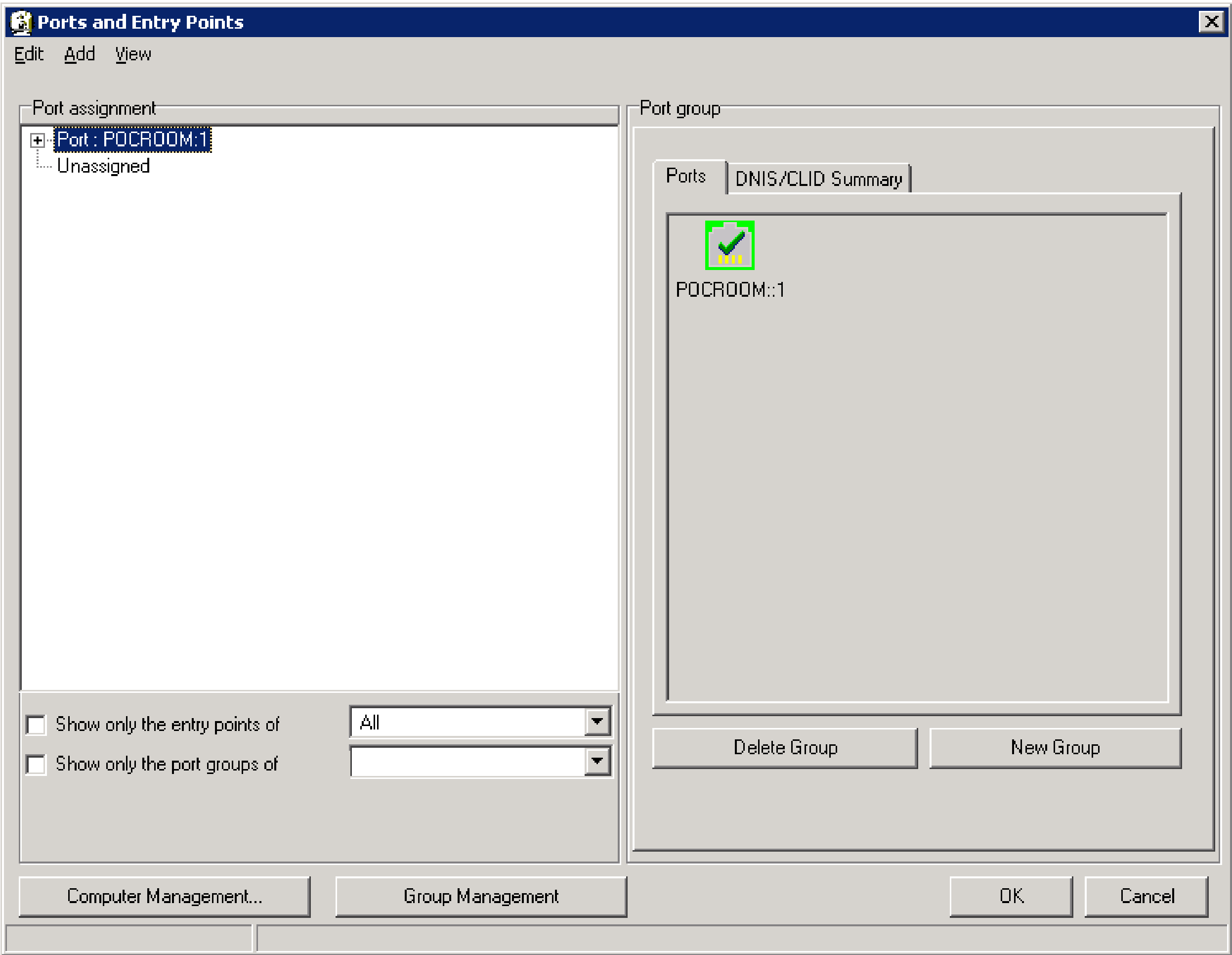


Figure 22: Ports and Entry Points

In the **Ports and Entry Points** window in **Figure** 23, set the **Home menu** and **Main menu** to the new entry point configured in **Figure** 21. Select the **DNIS/CLID** tab and enter an extension associated with a Voice Portal station configured on Communication Manager as shown in **Figure** 2. Click **OK**. In this example, this entry point will be used when Nuance OSA receives a DNIS of 23803. The other extension, 23802, is used to direct the user to a different top-level menu.

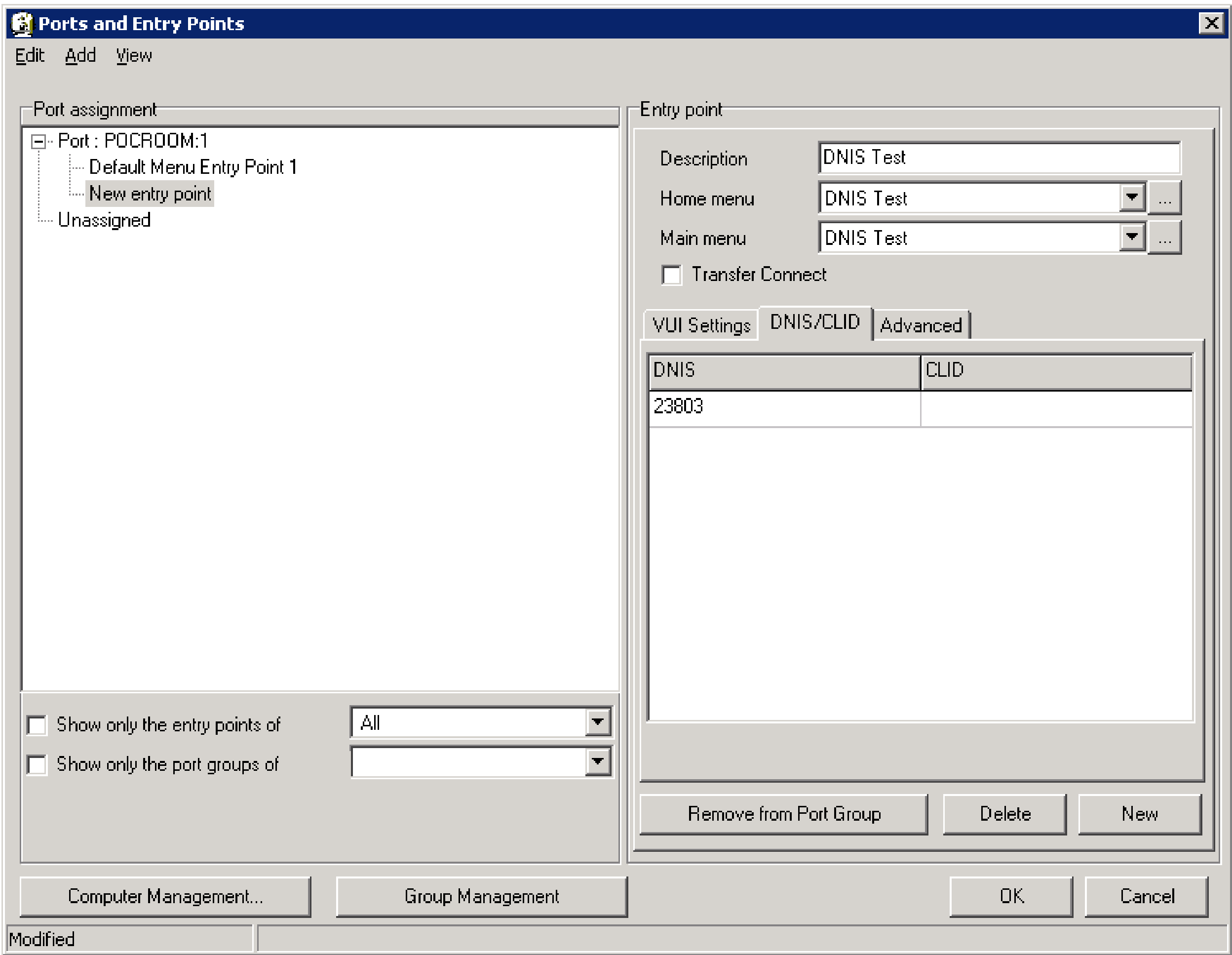


Figure 23: New Entry Point (DNIS/CLID Tab)

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

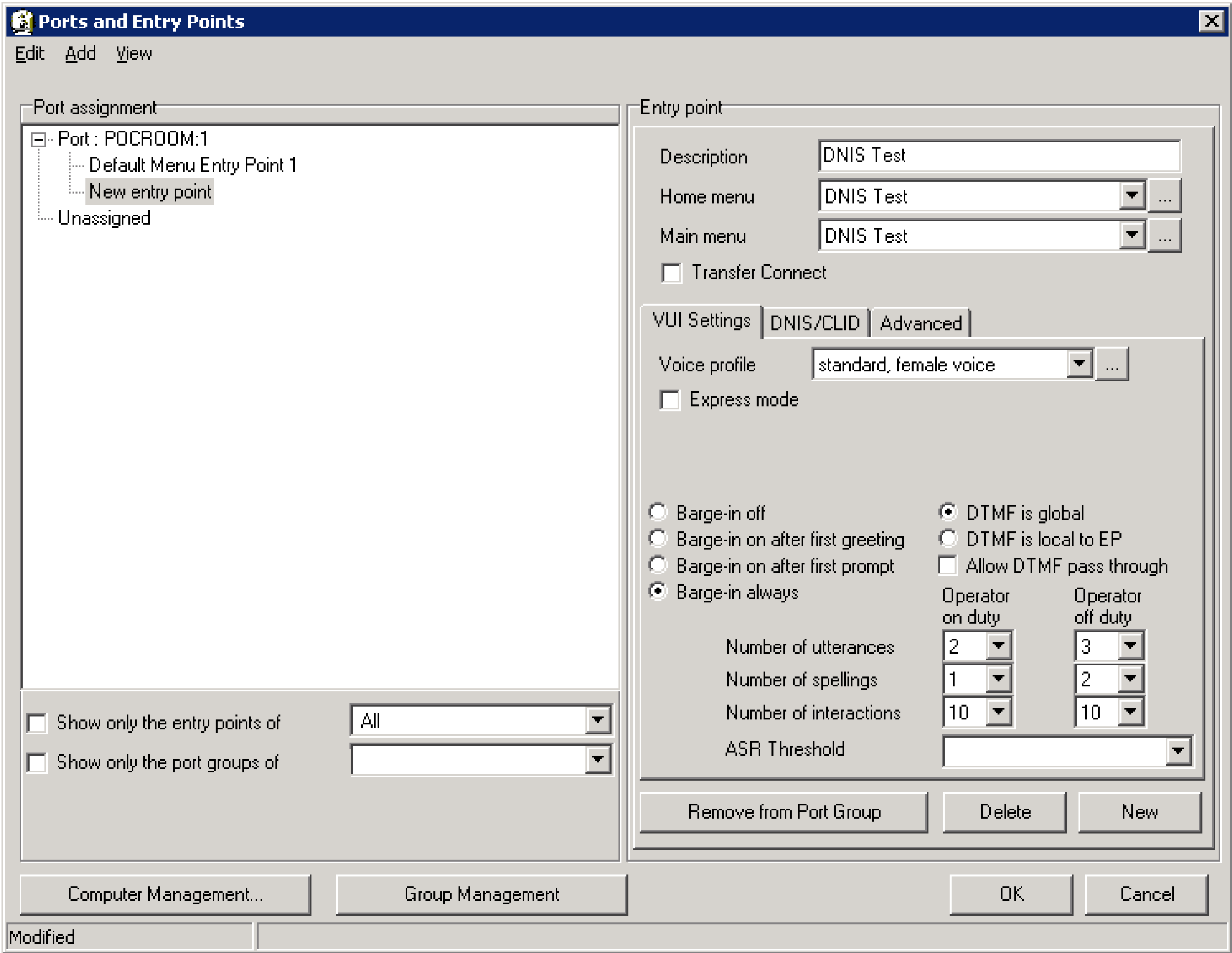


Figure 24: Ports and Entry Points (VUI Settings Tab)

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

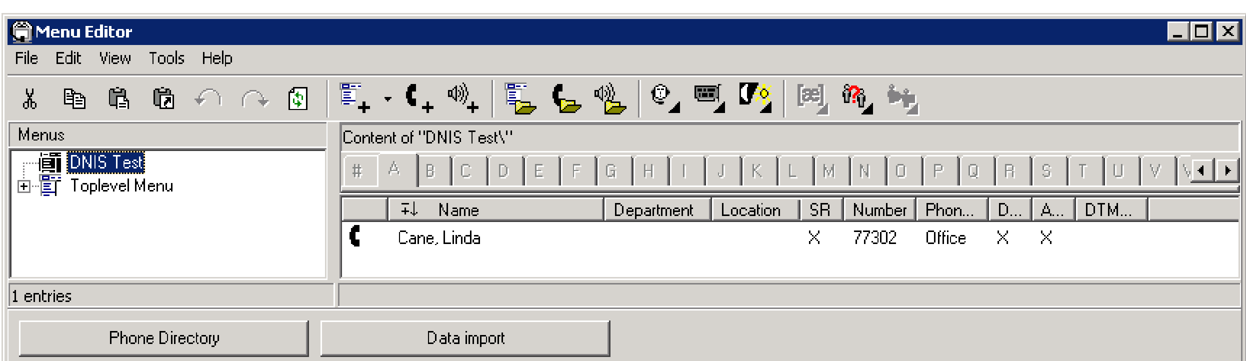


Figure 25: Transfer Entry for DNIS Test Top-Level Menu

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** 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*. Apply the changes as described above. Caller utterances can then be retrieved from the **Monitor** tool.

From **Admin Tools**, click on **Monitor** and log in with the appropriate credentials. Click on **Call Logs** in the left pane 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.

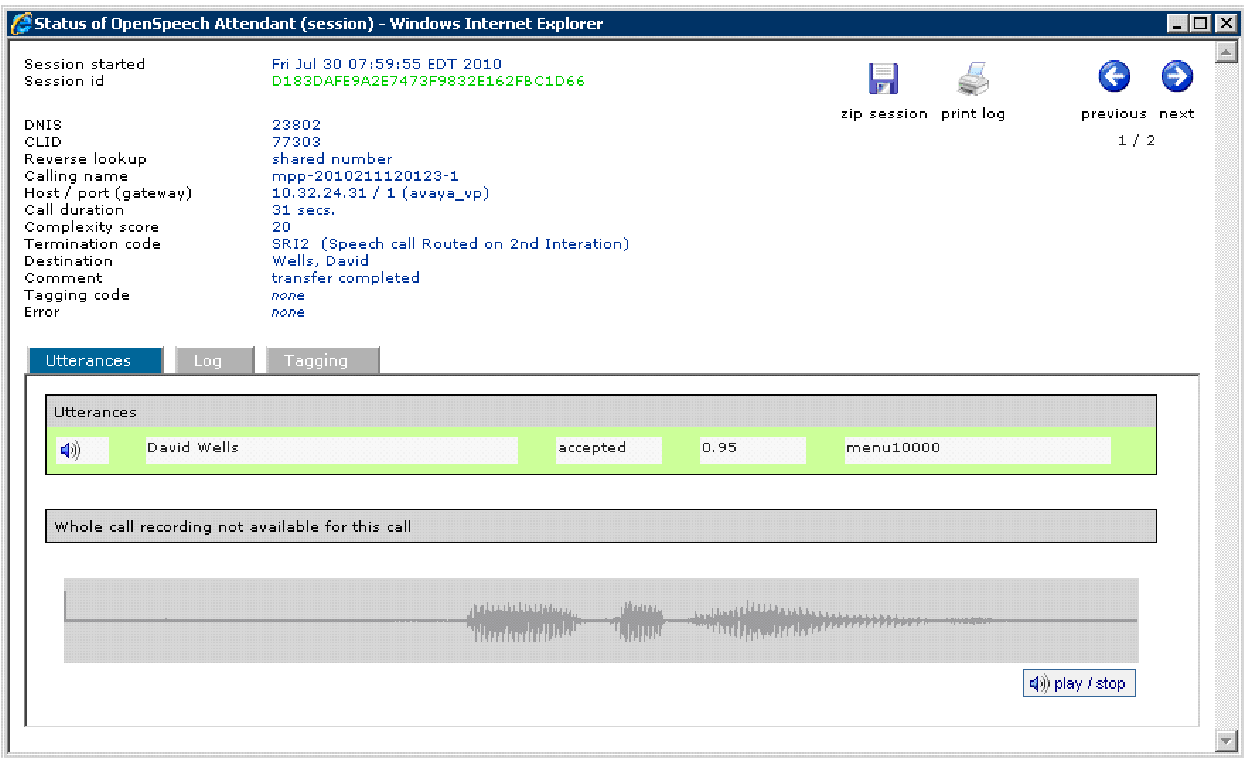


Figure 26: Caller Utterance

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, supervised, and bridged 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.

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. One observation made during testing was that during a supervised transfer, ringback is not heard by the caller. For blind and bridged transfers, ringback is heard by the caller.

7. Verification Steps

This section provides the verification steps that may be performed to verify that Voice Portal can access the Nuance OSA.

1. From the VPMS web interface, verify that the MPP server is online and running in the **MPP Manager** page as shown in
2. **Figure** 27.

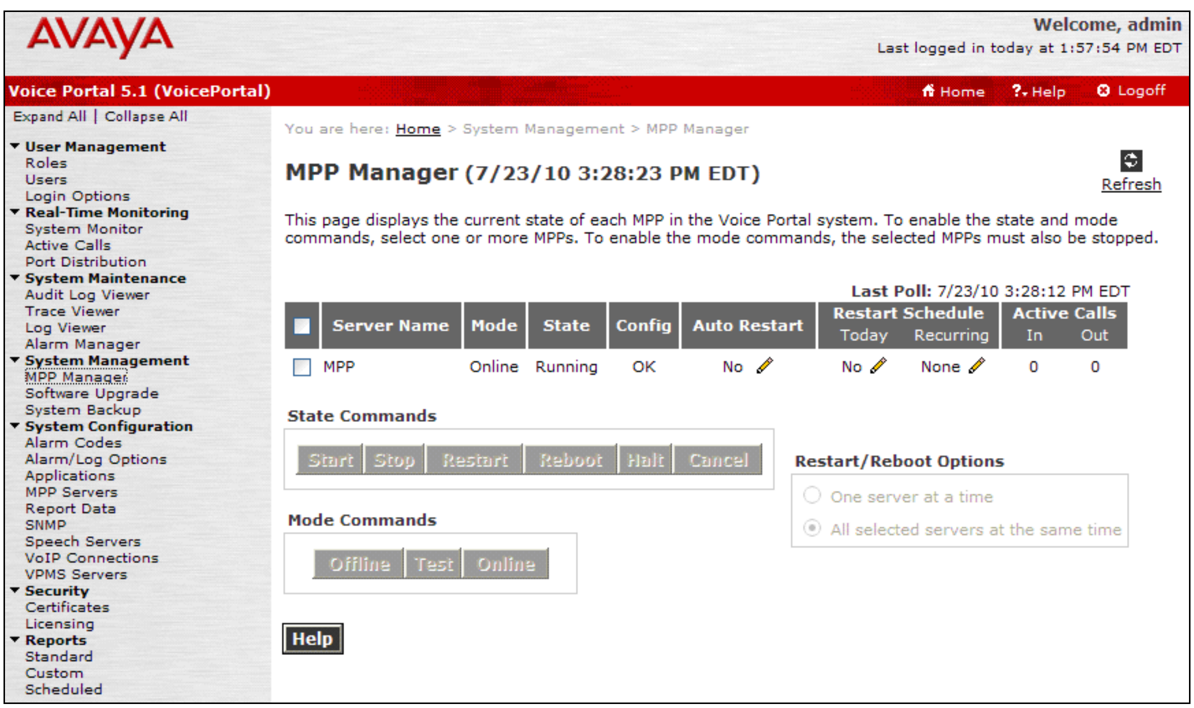


Figure 27: MPP Manager

3. From the VPMS web interface, verify that the ports on the MPP server are in-service from the **Port Distribution** page shown in
4. **Figure** 28.

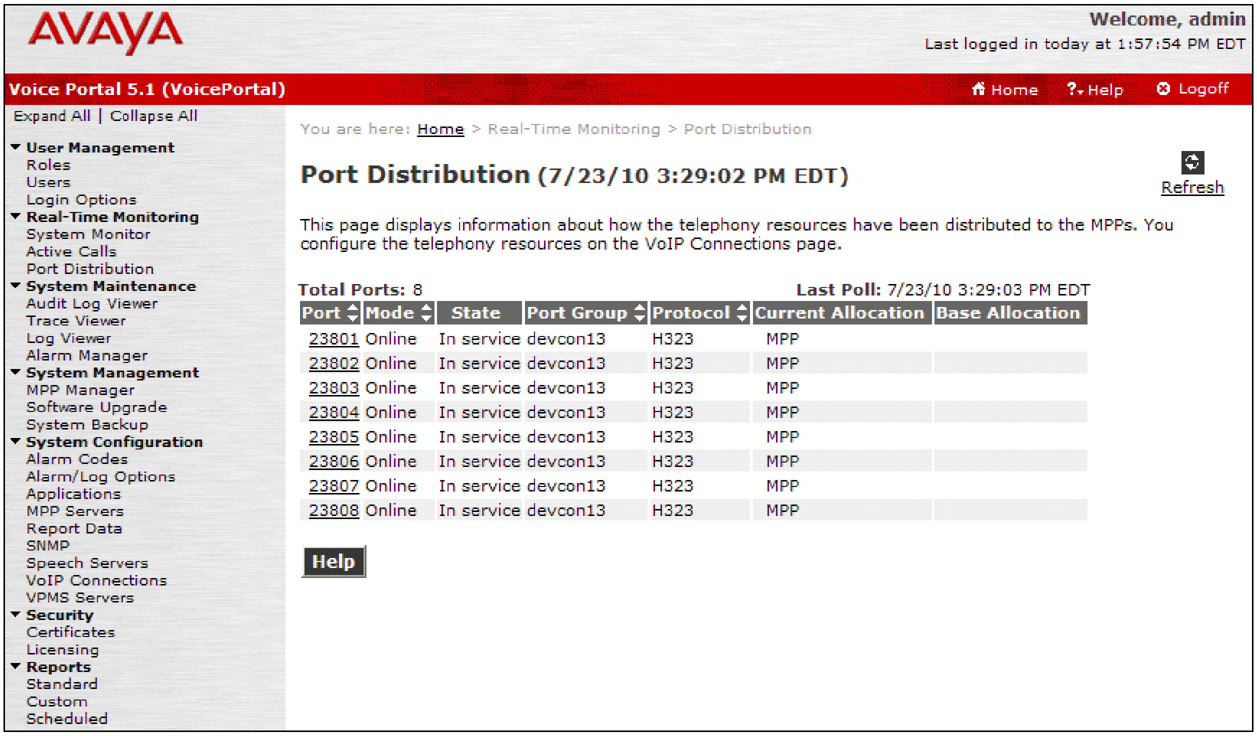


Figure 28: Port Distribution

5. Place a call to Voice Portal that invokes the Nuance OSA application. From the Nuance OSA server, open the OSA Monitor from **Admin Tools**. Verify that it detects an active call as shown in
6. **Figure** 29.

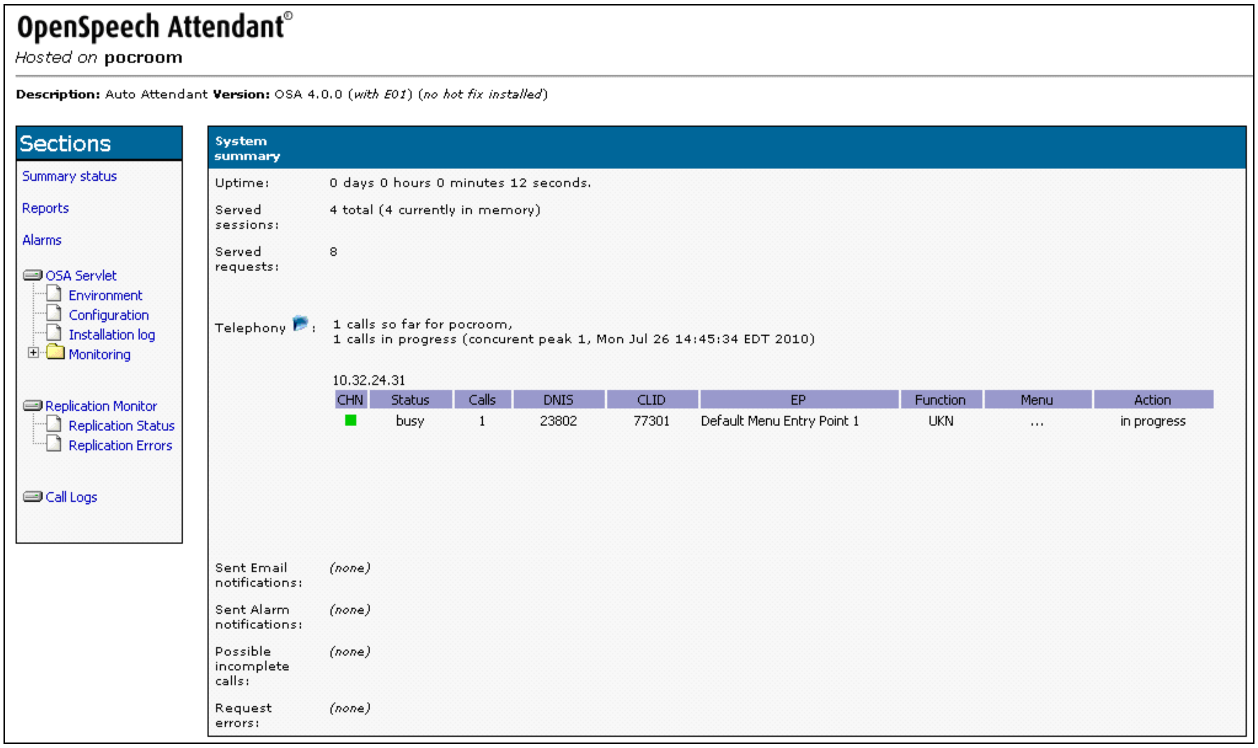


Figure 29: OSA Monitor

7. Verify that the Nuance OSA greeting is heard and OSA transfers the call to the proper destination specified in a spoken name or extension entered via DTMF.

8. From the OSA Monitor, click on **Call logs** in the left pane. Verify that the call log shown in
9. **Figure** 30 is displayed with the correct call information and status.

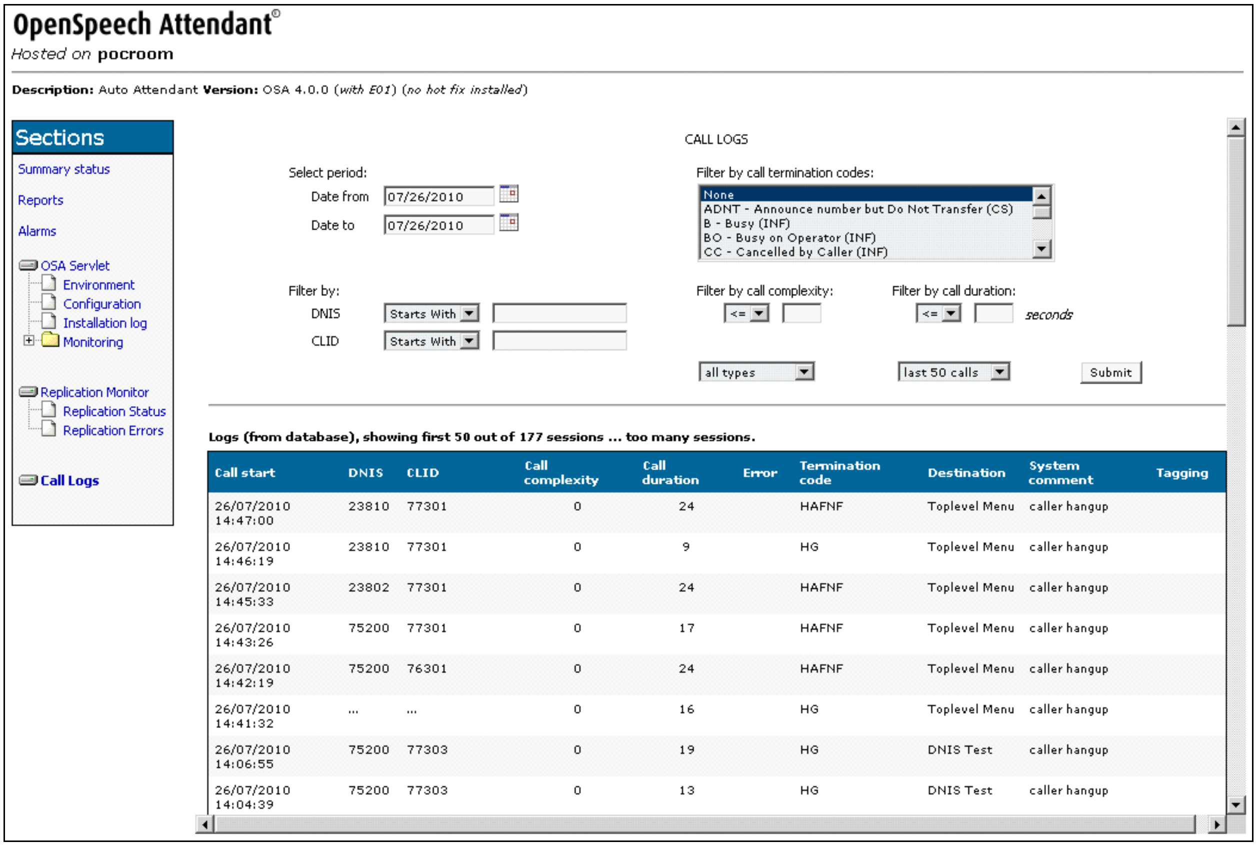


Figure 30: Call Log

8. Conclusion

These Application Notes describe the configuration steps required to integrate Nuance OpenSpeech Attendant with Avaya Voice Portal. All feature and serviceability test cases were completed successfully.

9. Additional References

This section references the Avaya documentation relevant to these Application Notes. The following Avaya product documentation is available at http://support.avaya.com.

[1] *Administering Avaya Aura™ Communication Manager*, Release 5.2, May 2009, Issue 5.0, Document Number 03-300509.

[2] *Avaya Aura™ Communication Manager Feature Description and Implementation*, Release 5.2, May 2009, Issue 7, Document 555-245-205.

[3] *Administering Voice Portal*, June 2010.

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.