



Avaya Solution & Interoperability Test Lab

Application Notes for LumenVox Speech Engine and LumenVox Media Server with Avaya Voice Portal – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate the LumenVox Speech Engine and LumenVox Media Server with Avaya Voice Portal. The LumenVox Speech Engine is a standards-based speech recognizer that supports multiple languages and can perform speech recognition on audio data from any audio source. The LumenVox Media Server is an MRCP server that handles MRCP communication from Voice Portal and passes requests to the Speech Engine for decode. This is done via an MRCPv1 connection.

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 LumenVox Speech Engine and LumenVox Media Server with Avaya Voice Portal. The LumenVox Speech Engine is a standards-based speech recognizer that supports multiple languages and can perform speech recognition on audio data from any audio source. The LumenVox Media Server¹ is an MRCP server that handles MRCP communication from Voice Portal and passes requests to the Speech Engine for decode. This is done via an MRCPv1 connection.

Another LumenVox related solution is described in [5], *Application Notes for LumenVox Speech Engine and LumenVox MRCPv1 Server with Avaya Interactive Response*.

1.1. Interoperability Compliance Testing

Interoperability compliance testing included feature and serviceability testing. The feature testing focused on placing calls to Avaya Voice Portal that ran VoiceXML applications that use the ASR engine in the LumenVox Speech Engine and the LumenVox Media Server. Various grammar types were used by the VXML applications, including inline, built-in, menu, and external Speech Recognition Grammar Specification (SRGS) grammars. The testing verified both speech and DTMF tone recognition.

The serviceability testing focused on verifying the ability of the LumenVox Speech Engine and LumenVox Media Server to recover from adverse conditions, such as power failures and disconnecting cables to the IP network.

1.2. Support

For technical support on the LumenVox Speech Engine and Media Server, contact LumenVox via phone, email, or internet.

- **Phone:** (877) 977-0707
- **Email:** support@lumenvox.com
- **Web:** <http://www.lumenvox.com>

¹ LumenVox Speech Engine provides two options for an MRCP server: LumenVox MRCPv1 Server and LumenVox Media Server. These Application Notes cover the Media Server using an MRCPv1 connection.

2. Reference Configuration

Figure 1 illustrates the configuration used for testing. In this configuration, Avaya Voice Portal interfaces with Avaya Aura™ Communication Manager via H.323, and interfaces to the LumenVox Speech Engine and Media Server via MRCPv1. VoiceXML (VXML) scripts were run by Avaya Voice Portal and used the automatic speech recognition (ASR) engine in the LumenVox Speech Engine. Since the LumenVox Speech Engine does not support text-to-speech (TTS), an optional third-party TTS engine may be used if required by the application. A TTS engine was used during testing (not shown).

Note: Configuration of the H.323 interface between Avaya Voice Portal and Avaya Aura™ Communication Manager is outside the scope of these Application Notes. The reader should refer to the documentation in the References section for additional information. These Application Notes will focus on the speech server configuration on Avaya Voice Portal and configuration of the LumenVox Speech Engine and Media Server.

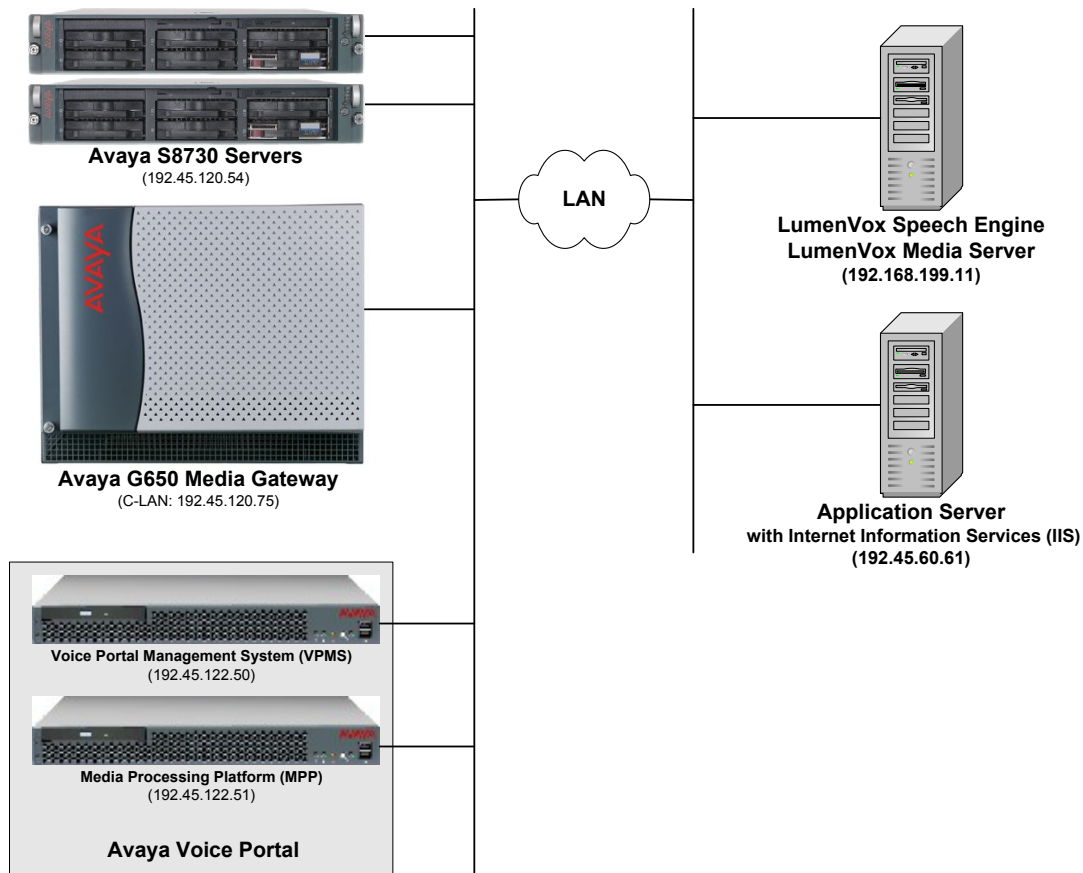


Figure 1: Configuration with Avaya Voice Portal, LumenVox Speech Engine, and LumenVox Media Server

2.1. Equipment and Software Validated

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

Equipment	Software
Avaya Voice Portal	5.0.0.0.4602
Avaya S8730 Servers with an Avaya G650 Media Gateway	Avaya Aura™ Communication Manager 5.2 (R015x.02.0.947.3) with Service Pack 1 (Patch 17294)
LumenVox Speech Engine	9.0.601
LumenVox Media Server	9.0.601
LumenVox License Server	9.0.601
Application Server – HTTP Server running Windows Server 2003	Microsoft Internet Information Services (IIS) 5.1

3. Configure Avaya Voice Portal

This section covers the administration of Avaya Voice Portal. The following configuration steps are covered:

- Adding a speech server
- Adding applications
- Starting the MPP server

Refer to [4] for additional information on configuring Avaya Voice Portal.

Avaya 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 account. The screen shown in **Figure 2** is displayed.

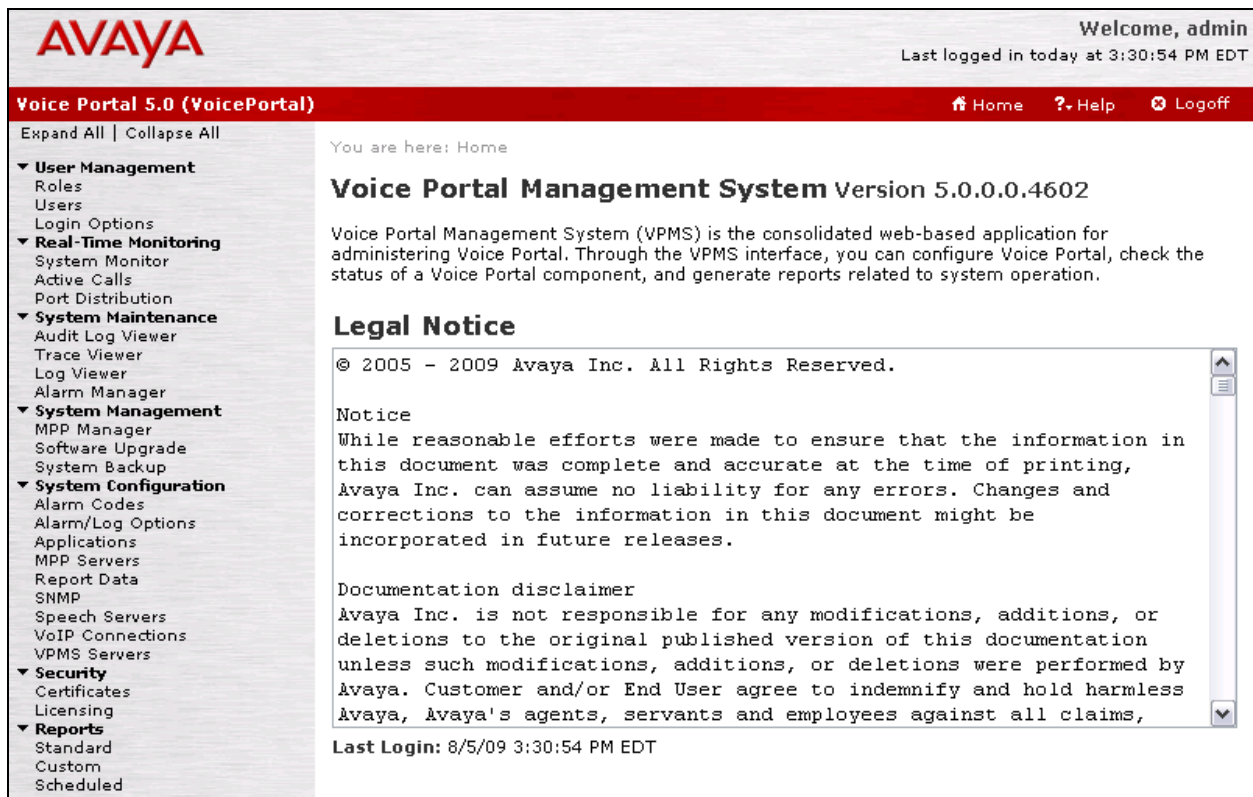


Figure 2: VPMS Main Screen

Add an ASR Server. To configure the ASR server, click on **Speech Servers** in the left pane, select the **ASR** tab, and then click **Add**. For the LumenVox ASR server, the **Engine Type** should be set to *IBM WVS*. Set the **Network Address** field to the IP address of the LumenVox Speech Engine and LumenVox Media Server and select the desired **Languages** to be supported. The other fields were set to their default values. Click **Save**.

AVAYA Welcome, admin
Last logged in today at 3:30:54 PM EDT

Voice Portal 5.0 (VoicePortal) Home ? Help Logoff

Expand All | Collapse All

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You are here: [Home](#) > [System Configuration](#) > [Speech Servers](#) > Add ASR Server

Add ASR Server

Use this page to configure Voice Portal to communicate with a new ASR server.

Name:

Enable: ☒ Yes ☐ No

Engine Type:

Network Address:

Base Port:

Total Number of Licensed ASR Resources:

New Connection per Session: ☒ Yes ☐ No

Languages:

Chinese(Simplified) zh-CN
English(UK) en-GB
English(Australia) en-AU
English(USA) en-US
French(Canada) fr-CA
German(Germany) de-DE

MRCP

Ping Interval: second(s)

Response Timeout: second(s)

Protocol:

RTSP URL:

Save **Cancel** **Help**

Figure 3: ASR Server

Add a TTS Server. Although the LumenVox Speech Engine does not support a TTS engine, a third-party TTS server that is supported by Avaya Voice Portal may be added in the TTS tab under the **Speech Servers** option in the left pane if it is required by the VXML application. For further instructions on how to add a TTS server to Avaya Voice Portal, refer to [4].

Add an Application. On the **Applications** page, add an Avaya Voice Portal application. Specify a **Name** for the application, set the **MIME Type** field to the appropriate value (e.g., VoiceXML), and set the **VoiceXML URL** field to point to a VoiceXML application hosted in the application server. Next, specify the type of ASR and TTS servers to be used by the application and the called number that invokes the application. In this example, the ASR speech server should be of type IBM WVS. The **Applications** screen is shown in **Figure 4**. Click **Save**.

Note: It is assumed that the VoiceXML application has already been developed and is hosted on the application server.

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You are here: [Home](#) > [System Configuration](#) > [Applications](#) > Add Application

Add Application

Use this page to deploy and configure a new VoiceXML or CCXML application on the Voice Portal system.

Name:

Enable: ☒ Yes ☐ No

MIME Type:

VoiceXML URL: **Verify**

Speech Servers

ASR: TTS:

Languages:

Application Launch

Type: ☒ Inbound ☐ Inbound Default ☐ Outbound

☒ Number ☐ Number Range ☐ URI

Called Number: **Add**

Remove

Speech Parameters ▶

Reporting Parameters ▶

Advanced Parameters ▶

Save **Cancel** **Help**

Figure 4: Applications

Start the MPP Server. Start the MPP server from the **MPP Manager** page shown in **Figure 5**. Select the MPP and then click the **Start** button. After the MPP is started, the **Mode** of the MPP should be *Online* and the **State** should be *Running*.

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Voice Portal 5.0 (VoicePortal) Home Help Logoff

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You are here: [Home](#) > System Management > MPP Manager

MPP Manager (8/5/09 4:41:17 PM EDT)

[Refresh](#)

This page displays the current state of each MPP in the Voice Portal system. To enable the state and mode commands, select one or more MPPs. To enable the mode commands, the selected MPPs must also be stopped.

Last Poll: 8/5/09 4:41:12 PM EDT

<input checked="" type="checkbox"/>	Server Name	Mode	State	Config	Auto Restart	Restart Today	Schedule Recurring	Active Calls In	Out
<input checked="" type="checkbox"/>	mpp1	Online	Stopped	None	No	No	None	0	0

State Commands

Start **Stop** **Restart** **Reboot** **Halt** **Cancel**

Mode Commands

Offline **Test** **Online**

Restart/Reboot Options

☐ One server at a time

☒ All selected servers at the same time

Help

Figure 5: MPP Manager

4. Configure LumenVox Speech Engine and LumenVox Media Server

This section covers the configuration required for the LumenVox Speech Engine and LumenVox Media Server. This is accomplished by editing a file called **LvMediaServer.config** that is put into **C:\Program Files\Lumenvox\config** in Windows by default. The following parameters should be configured as follows:

- *rtsp_port* should match the *Base Port* field configured for the ASR server in **Figure 3**
- *mrcp_server_ip* should be set to the IP address of the LumenVox Media Server
- *compatibility_mode* should be set to '0' so that the LumenVox Media Server behaves like an IBM WVS speech server with MRCPv1 support

Refer to [6] for a complete reference for the LumenVox Speech Engine.

```
#-----
# this is the config file used by the Lumenvox Media Server.
# the format is very simple.
#
# lines starting with '#' are comments and are ignored.
# blank lines are also ignored.
#
# valid lines have the format 'param = value'.
# spaces are stripped from beginning of the line and
# from around the equal sign.
#
# PLEASE NOTE that the parameter names are case-sensitive.
#-----
# See the following link for detailed information regarding these
# various settings. There are several settings mentioned on the
# site that are not listed here (but can still be used)...
# http://www.lumenvox.com/help/speechEngine/mrcp/mrcpv2/administration/configuring-
# parameters.htm
#-----

#-----
#
# custom Log file name for the mrcp server
#-----
media_server_log                = LvMediaServer.txt

#-----
# this parameter sets the port on which the server will listen
# for incoming SIP messages. 0 = Disabled.
#-----
sip_port                        = 5060

#-----
# this parameter sets the port on which the server will listen
# for incoming RTSP messages. 0 = Disabled. Default value = 554
#-----
rtsp_port                      = 554
#-----
# This is the only parameter that you really NEED to set.
# all the others have acceptable defaults. Replace this number
```

```

# with your machine's IP address. Only leave this default loop back
# IP address if you install the MRCP server on the same machine as
# the platform that is hosting your application.
#-----
mrcp_server_ip                = 192.168.199.11
#-----
# this parameter is the lowest numbered port that will be used
# for MRCP. One port will be used per MRCP resource.
#-----
mrcp_server_port_base          = 49922
#-----
# this parameter is the lowest numbered port that will be used
# for RTP/RTCP. One port will be used per RTP resource
#-----
rtp_server_port_base           = 50922
#-----
# the maximum number of concurrent resources.
# practically speaking, this number can not be greater than the
# number of port licenses you have for your SRE. There can be this
# number of RTP ports AND also this number of MRCP ports,
# providing that licensing requirements are met.
#-----
mrcp_server_resmax              = 200
#-----
# this parameter sets the port on which the server will listen
# for incoming monitoring client connections.
#-----
monitoring_port                 = 49911
#-----
# if you are running the MrcpServer and SRE on different machines,
# set this value to the IP address of the machine that is running
# the SRE.
#-----
sre_ip                          = 127.0.0.1
#-----
# enable_logging = 1 or 0 (default)
#-----
enable_logging                   = 1
#-----
# enable_sre_logging = 1 or 0 (default)
# enable or disable logging of response files in the Lang\Responses
# Directory of of the Speech Recognition Engine
#-----
enable_sre_logging              = 1
#-----
# Vendor Specific parameters
#-----
choose_model                    = 1
enable_lattice_scoring          = 1
initial_audio_time              = 100
wind_back_time                  = 1000
barge_in_timeout                = 15000
end_of_speech_timeout           = 20000
snr_sensitivity_lvl             = 50

```

```

sess_timeout_sec          = 0
session_act_as_ms         = 0
init_silence_trimmed      = 0

#-----
# MRCPv2 Standard parameters
#-----

sensitivity_lvl           = 0.5
nbest_length              = 1
confidence_thrsltd        = 0.45
no_input_timeout          = 10000
dtmf_termination_timeout  = 5000
recognizer_start_timers   = false
recognition_timeout       = 10000
speech_complete_timeout   = 800
dtmf_inter_digit_timeout  = 5000
dtmf_buffer_time          = 5000
dtmf_term_char            = #
save_waveform             = false
waveform_url_location     =

#-----
# Nuance compatibility mode = 1 or 0 (default)
# enable or disable the LvMediaServer behaving like a Nuance
# MRCPv1/v2 server
#-----
compatibility_mode       = 0

```

Figure 6: LvMediaServer.config File

5. General Test Approach and Test Results

This section describes the interoperability compliance testing used to verify Avaya Voice Portal VXML applications that use the ASR engine in the LumenVox Speech Engine. This section covers the general test approach and the test results.

Interoperability compliance testing included feature and serviceability testing. The feature testing focused on placing calls to Avaya Voice Portal that ran VoiceXML applications that use the ASR engine in the LumenVox Speech Engine and the LumenVox Media Server. Various grammar types were used by the VXML applications, including inline, built-in, menu, and external Speech Recognition Grammar Specification (SRGS) grammars. The testing verified both speech and DTMF tone recognition.

The serviceability testing focused on verifying the ability of the LumenVox Speech Engine and LumenVox Media Server to recover from adverse conditions, such as power failures and disconnecting cables to the IP network.

All test cases passed. Avaya Voice Portal was successful in running applications that use the ASR engine of the LumenVox Speech Engine. Avaya Voice Portal communicated with the LumenVox Media Server via an MRCPv1 connection.

6. Verification Steps

This section provides the verification steps that may be performed to verify that Avaya Voice Portal can run IVR applications that use the LumenVox Speech Engine and LumenVox Media Server.

1. From the VPMS web interface, verify that the MPP server is online and running in the **MPP Manager** page shown in **Figure 7**.

AVAYA Welcome, admin
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You are here: [Home](#) > System Management > MPP Manager

MPP Manager (8/5/09 4:51:56 PM EDT) Refresh

This page displays the current state of each MPP in the Voice Portal system. To enable the state and mode commands, select one or more MPPs. To enable the mode commands, the selected MPPs must also be stopped.

Last Poll: 8/5/09 4:51:37 PM EDT

	Server Name	Mode	State	Config	Auto Restart	Restart Schedule		Active Calls	
						Today	Recurring	In	Out
<input type="checkbox"/>	mpp1	Online	Running	OK	No	No	None	0	0

State Commands
Start Stop Restart Reboot Halt Cancel

Mode Commands
Offline Test Online

Restart/Reboot Options
☐ One server at a time
☒ All selected servers at the same time

Help

Figure 7: MPP Manager

- From the VPMS web interface, verify that the ports on the MPP server are in service in the **Port Distribution** page as shown in **Figure 8**.

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You are here: [Home](#) > Real-Time Monitoring > Port Distribution

Port Distribution (8/5/09 4:53:26 PM EDT)

[Refresh](#)

This page displays information about how the telephony resources have been distributed to the MPPs. You configure the telephony resources on the VoIP Connections page.

Total Ports: 8 Last Poll: 8/5/09 4:53:27 PM EDT

Port	Mode	State	Port Group	Protocol	Current Allocation	Base Allocation
23801	Online	In service	devcon13	H323	mpp1	
23802	Online	In service	devcon13	H323	mpp1	
23803	Online	In service	devcon13	H323	mpp1	
23804	Online	In service	devcon13	H323	mpp1	
23805	Online	In service	devcon13	H323	mpp1	
23806	Online	In service	devcon13	H323	mpp1	
23807	Online	In service	devcon13	H323	mpp1	
23808	Online	In service	devcon13	H323	mpp1	

[Help](#)

Figure 8: Port Distribution

- Place a call to an Avaya Voice Portal extension that runs a VXML script that uses the LumenVox Speech Engine and LumenVox Media Server. Verify that the application answers the call and that the application is able to recognize the speech input provided by the caller.

7. Conclusion

These Application Notes describe the configuration steps required to integrate the LumenVox Speech Engine and LumenVox Media Server with Avaya Voice Portal using an MRCPv1 connection. VXML applications that use various grammar types were used and the speech input was recognized accurately.

8. Additional References

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

- [1] *Administering Avaya AuraTM Communication Manager*, Document 03-300509, Issue 5, May 2009, available at <http://support.avaya.com>.
- [2] *Avaya AuraTM Communication Manager Feature Description and Implementation*, Document 555-245-205, Issue 7, May 2009, available at <http://support.avaya.com>.
- [3] *Implementing Avaya Voice Portal on multiple servers*, March 2009, available at <http://support.avaya.com>.
- [4] *Administering Avaya Voice Portal*, March 2009, available at <http://support.avaya.com>.
- [5] *Application Notes for LumenVox Speech Engine and LumenVox MRCPv1 Server with Avaya Interactive Response*, Issue 1.0, available at <http://support.avaya.com>.
- [6] *LumenVox Online Documentation* available at <http://www.lumenvox.com/help/speechEngine/index.htm>.

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