Avaya Solution & Interoperability Test Lab

Application Notes for LumenVox Automated Speech Recognizer, LumenVox Text-to-Speech Server and Call Progress Analysis with Avaya Aura® Experience Portal – Issue 1.1

Abstract

These Application Notes describe the configuration steps required to integrate LumenVox Automated Speech Recognizer, Text-to-Speech Server and Call Progress Analysis with Avaya Aura® Experience Portal.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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.

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1. Introduction

The objective of compliance test was to validate interoperability of LumenVox Automated Speech Recognizer, Text-to-Speech Server and Call Progress Analysis with Avaya Aura® Experience Portal.

LumenVox provides a complete set of speech recognition and text-to-speech technologies for use in interactive voice response (IVR) applications. The product set includes the LumenVox Automatic Speech Recognizer (ASR) and Text-to-Speech (TTS) Server. Both products are used in conjunction with the LumenVox Media Server which provides an interface to Avaya Aura® Experience Portal using the Media Resource Control Protocol (MRCP). LumenVox Call Progress Analysis (CPA) solution leverages the strength of LumenVox Automated Speech Recognizer (ASR) by constantly listening for various tones, just as it would when performing speech recognition. These are compared to special acoustic models for matches, similar to our ASR's function. The result is more reliable and highly accurate message delivery.

2. General Test Approach and Test Results

General test approach was to test various VoiceXML scripts that exercise various types of grammars in LumenVox ASR and TTS. A predefined set of VoiceXML scripts tested built-in grammars, menu grammars and SRGS grammars. Also, to test several call scenarios that would test the capabilities of LumenVox CPA.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability tests. Feature tests focused on the ability of LumenVox ASR and TTS to successfully exercise appropriate grammar and return expected results. Additionally, feature tests for CPA focused on the ability of LumenVox CPA to detect tones for Voicemail or Answering Machine and Human Voice.

Serviceability testing focused on verifying the ability of LumenVox ASR and TTS server to recover from adverse conditions, such as restart, power failures and network disconnects.

2.2. Test Results

All test cases were passed.

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2.3. Support

To obtain technical support for LumenVox:

- **Web:** www.lumenvox.com/help/
- **Email:** support@lumenvox.com
- **Phone:** (858)707–7700 ask for "Support"

3. Reference Configuration

Following diagram shows the configuration used during interoperability compliance test. Reference configuration consisted of:

- Avaya Aura® Experience Portal
- Avaya Aura® Communication Manager
- Avaya Aura® Session Manager
- Avaya Aura® System Manager
- Avaya G450 Media Gateway
- Avaya 9600 Series IP Deskphones
- LumenVox

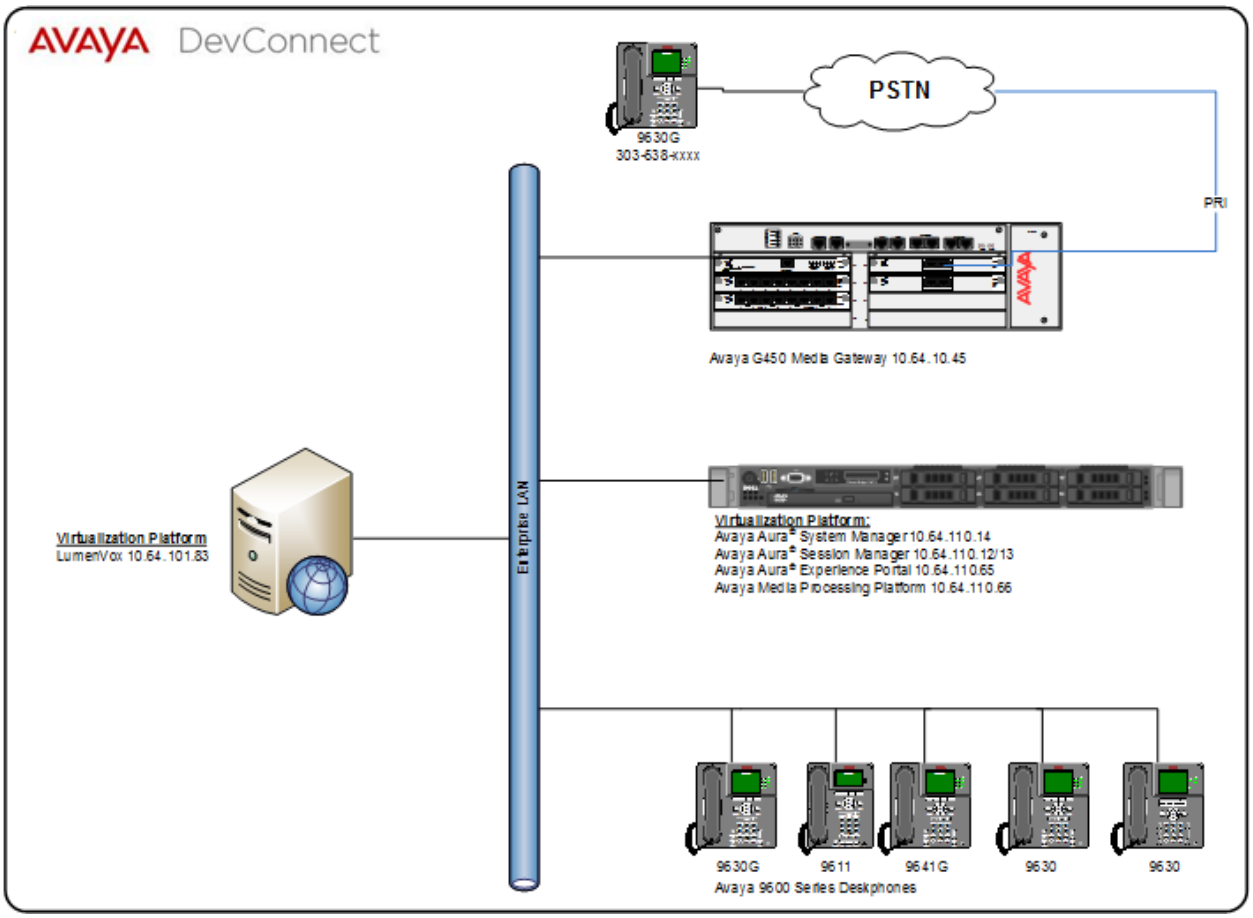

Figure 1: Reference Configuration

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3.1. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Experience Portal	7.1.0.0.1107
Avaya G450 Media Gateway	37.19.0
Avaya Aura® Communication Manager	00.0.441.0-23384
Avaya 9600 Series IP Deskphones	Various
Avaya Aura® Session Manager	7.0.1.1.701114
Avaya Aura® System Manager	7.0.1.1.065378
LumenVox	15.0.400

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4. Configure Avaya Aura® Experience Portal

Configuration and verification for Experience Portal illustrated in this section were all performed using either the Experience Portal Manager (EPM) or SSH connection to the Experience Portal server. It is implied a working system is already in place, including Media Processing Platform (MPP), Apache Tomcat Application Server and SIP routing via Session Manager. Installation of Voice XML applications is also out with the scope of this document. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 8**. The configuration described in this section can be summarized as follows:

- Update languages property files to allow LumenVox speech server type.
- Add LumenVox Speech servers

4.1. Update Language properties

LumenVox does not appear in the drop down list of ASR/TTS server types when using Experience Portal 7.1.0, so at this time 2 files need to be updated on the Experience portal server. First, the updated files must be obtained from LumenVox or downloaded via LumenVox Knowledge base website, article number AA-02166.

Please note that the following steps have to be done with root level privileges.

- Copy the new language files on to the Experience Portal server, the files will be named:
  - languages.properties_lib
  - languages.properties_webapps
- Log in to Experience portal via SSH.
- Switch user to a privileged administrator account with permissions to make these changes.
- Use **cd $CATALINA_HOME/lib/config**
  - Default EPM Tomcat Directory is /opt/tomcat/tomcat
- Rename the current languages.properties (e.g. **mv languages.properties languages.orig**) and copy languages.properties_lib to this directory, renaming it as languages.properties (e.g. **mv <_lib file location>languages.properties_lib languages.properties**).
- Use **chown avayavp languages.properties** to set the correct owner for this file.
- Use **chmod 750 languages.properties** to set the correct permissions.
- Use **cd $CATALINA_HOME/webapps/VoicePortal/WEB-INF/classes/messages/**
- Rename the current languages.properties (e.g. **mv languages.properties languages.orig**) and copy languages.properties_webapps to this directory renaming it as languages.properties (e.g. **mv <_lib file location>languages.properties_lib languages.properties**).
- Use **chown avayavp languages.properties** to set the correct owner for this file.
- Use **chmod 750 languages.properties** to set the correct permissions.

Tomcat must now be restarted.

- Use **cd $CATALINA_HOME/bin**
  - **./shutdown.sh**
- Wait for this to complete.

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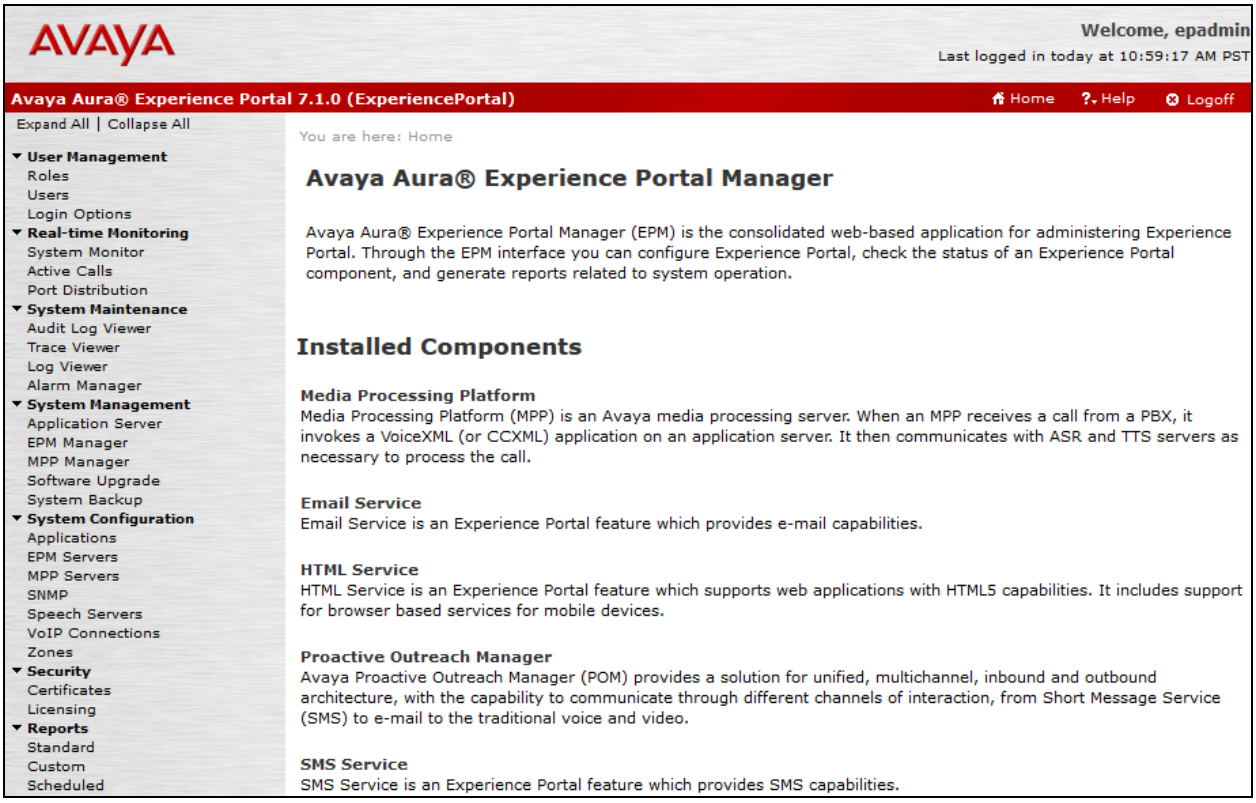
- **./startup.sh**

4.2. Add Speech Servers

Avaya Aura® Experience Portal is configured via the Experience Portal Manager (EPM) web interface. To access the web interface, enter https://<*ip-addr*>/ as the URL in a web browser, where <*ip-addr*> is the IP address of EPM. Log in using the appropriate credentials.

On the left pane, click on **Speech Servers**.



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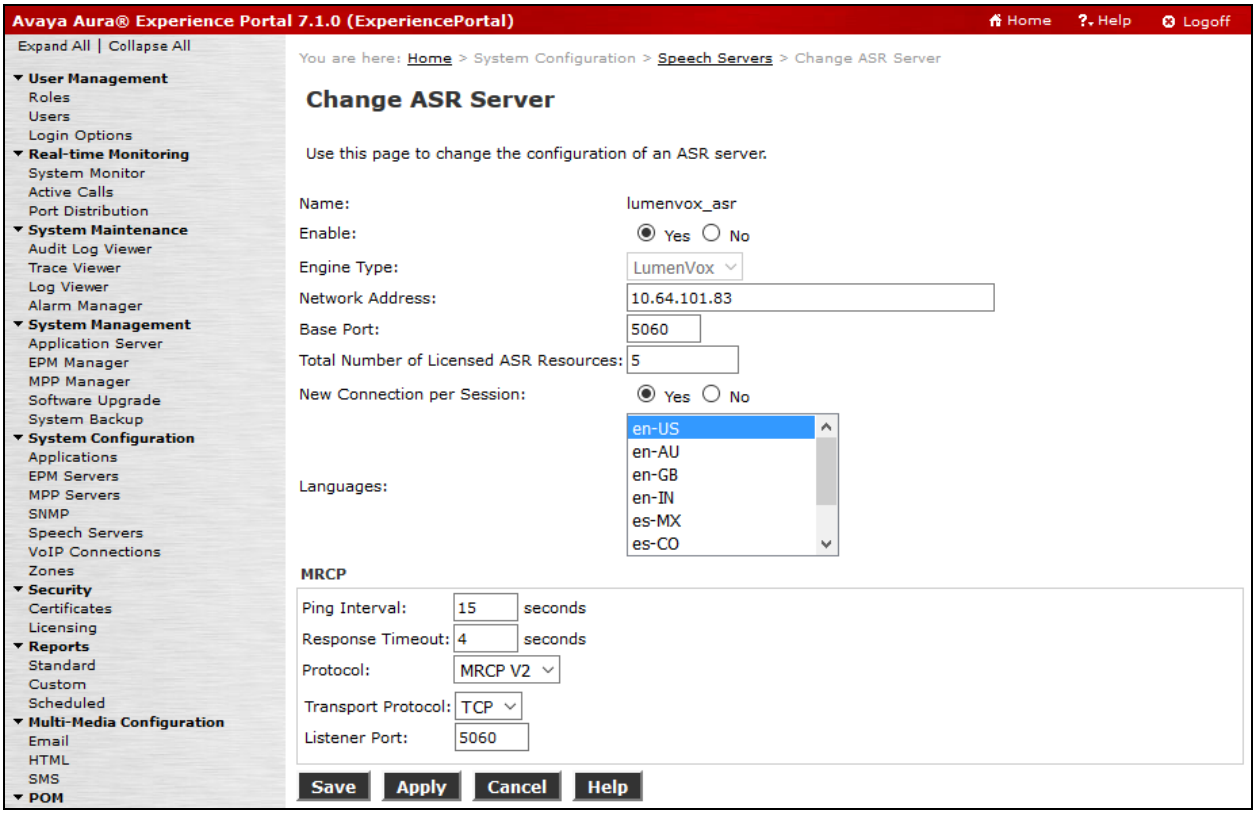
4.2.1. ASR Server

To add an **ASR** server, click on the **ASR** tab, and click **Add.**

- Type in a **Name**.
- Set **Enable** to **Yes**.
- Set **Engine Type** to **LumenVox**.
- Type in the IP address of LumenVox Automated Speech Recognizer in **Network Address**.
- Type in appropriate value in **Total Number of Licensed ASR Resources.**
- Set **New Connection per Session** to **Yes**.
- Set **Languages** to **en-US**.
- Set **Protocol** to **MRCP V2**.
- Set **Listener Port** to **5060**.
- Click **Save** to save changes.

Note that the screen capture below displays the configuration during compliance testing.



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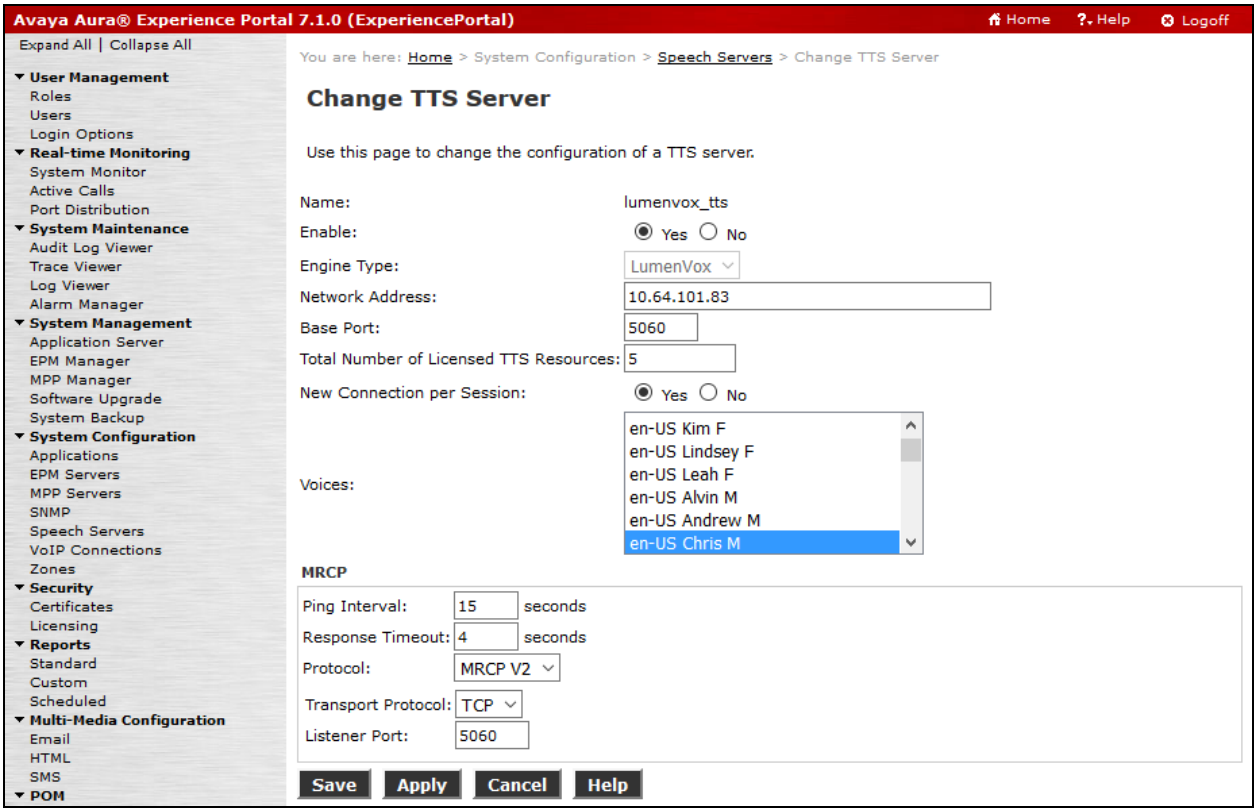
4.2.2. TTS Server

To add a **TTS** server, click on the **TTS** tab on **Speech Servers** page, and click **Add.**

- Type in a **Name**.
- Set **Enable** to **Yes**.
- Set **Engine Type** to **LumenVox**.
- Type in the IP address of LumenVox Text-to-Speech in **Network Address**.
- Type in appropriate value in **Total Number of Licensed TTS Resources**.
- Set **New Connection per Session** to **Yes**.
- Set **Voices** to **en-US Chris M**.
- Set **Protocol** to **MRCP V2**.
- Set **Listener Port** to **5060**.
- Click **Save** to save changes.

Note that the screen capture below displays the configuration during compliance testing.



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5. Configure LumenVox

There is very little LumenVox configuration that is required. Log onto LumenVox server configure as follows:

1. Edit the **media_server.conf** file
    a. On Windows, located in **Program Files\LumenVox\Engine\config**
    b. On Linux, located in **/etc/lumenvox**
2. Set **mrcp_server_ip** to the IP address of the server running the LumenVox Media Sever
    a. It should not be left as the default *127.0.0.1*
3. Set **sip_port** to **5060**

Other configurations are available that may be turned on, if desired:

- Logging for debugging can be enabled by editing the **client_property.conf** file and setting **LOGGING_VERBOSITY = 3**
- Utterance files for speech tuning can be enabled by editing the **media_server.conf** file and setting
    - **enable_sre_logging = 3** for ASR utterance files

For more information on available configuration options, see the LumenVox Knowledge Base or the LumenVox Developers Network.

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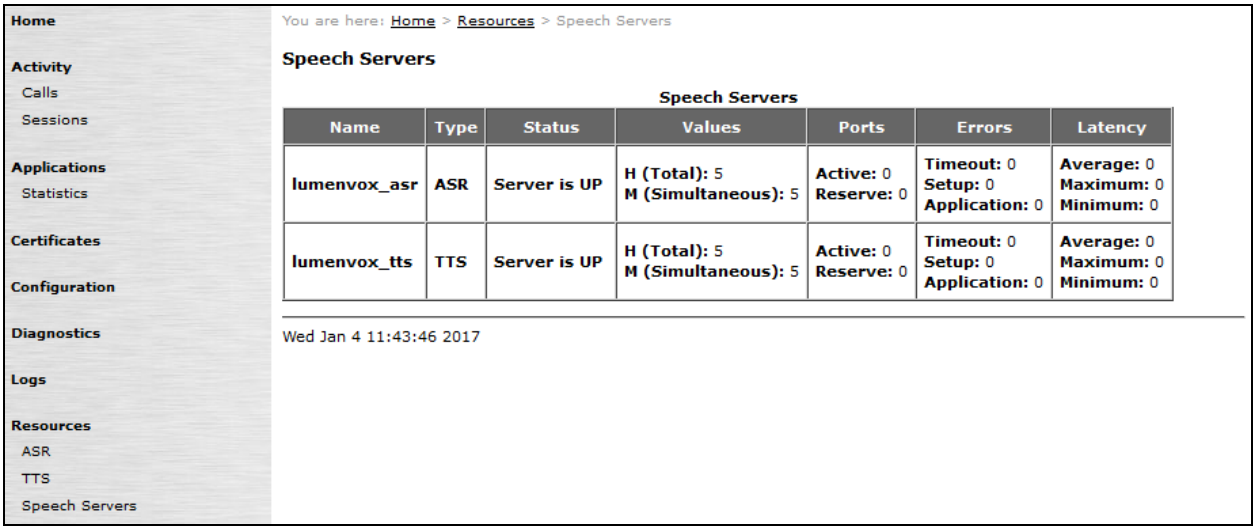
6. Verification Steps

6.1. Avaya Aura® Experience Portal

This section provides the verification steps that may be performed to verify that Avaya Aura® Experience Portal can run LumenVox ASR and TTS servers.

Verify the Speech Servers are UP. On the left page, select **System Monitor** and navigate to **MPP → Service Menu → Resources → Speech Servers**.



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6.2. LumenVox

From a command line, run the following command:

- Linux:
  - /usr/bin/lv_show_config –mrcp_test
- Windows:
  - cd "C:\Program Files\LumenVox\Engine\"
  - LVShowConfig.exe –mrcp_test

This will run a series of tests to verify that ASR, TTS, and the LumenVox Media Server are working correctly:

```
[interop@LumenVox ~]$ /usr/bin/lv_show_config -mrcp_test

============================================================

Testing LumenVox Media Server
WARNING: 127.0.0.1 (i.e. localhost) detected as default network
interface
         Some functionality may not work.


Testing MRCP v1 (en-US) TTS Synthesis
The MRCP v1 TTS Synthesis completed successfully

Testing MRCP v2 (en-US) TTS Synthesis (SIP/UDP)
The MRCP v2 TTS Synthesis completed successfully

Testing MRCP v2 (en-US) TTS Synthesis (SIP/TCP)
The MRCP v2 TTS Synthesis completed successfully

Testing MRCP v1 (en-US) ASR Recognition
The MRCP v1 ASR Recognition completed successfully

Testing MRCP v2 (en-US) ASR Recognition (SIP/UDP)
The MRCP v2 ASR Recognition completed successfully

Testing MRCP v2 (en-US) ASR Recognition (SIP/TCP)
The MRCP v2TCP ASR Recognition completed successfully

============================================================
```

Note that if you do not have ASR or TTS licenses, some or all of these tests might fail (e.g. if you only have TTS licenses, then you would expect the ASR tests to fail).

LumenVox Dashboard Diagnostics allows users to perform a series of Diagnostic tests as well as check the configuration of the LumenVox services on the system along with a number of other options. LumenVox Dashboard is available via browser, https://<ip-address>:8080, where ip-address is the IP Address of LumenVox

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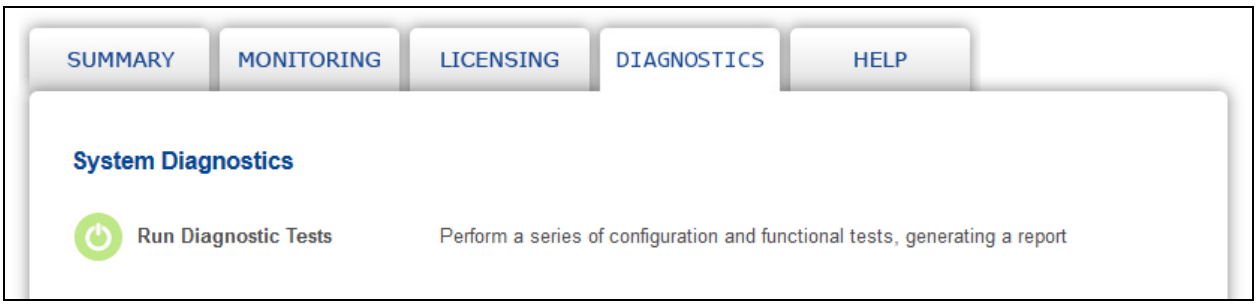
To verify whether LumenVox is properly configured or not, navigate to **LumenVox Dashboard → DIAGNOSTICS → Run Diagnostic Tests**.



This will run a series of tests including a check of the current configuration settings and will generate a detailed description of the configuration settings relating to all of the LumenVox services.

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7. Conclusion

These Application Notes describe the configuration steps required to integrate LumenVox Automated Speech Recognizer, LumenVox Text-to-Speech Server and Call Progress Analysis with Avaya Aura® Experience Portal. All feature and serviceability test cases were completed successfully.

8. 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® Experience Portal, Release 7.1, Issue 1, May 2016

LumenVox documentation is always available from http://www.lumenvox.com/knowledgebase.

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