

Avaya Solution & Interoperability Test Lab

Application Notes for LumenVox Speech Suite 18.0 with Avaya Aura® Experience Portal 7.2.3 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate LumenVox Speech Suite with Avaya Aura® Experience Portal. LumenVox Speech Suite includes Automatic Speech Recognizer (ASR), Text-to-Speech (TTS), and Call Progress Analysis (CPA). LumenVox Speech Suite used Media Resource Control Protocol (MRCP) Version 2 to interface to 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 the 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.

1. Introduction

These Application Notes describe the configuration steps required to integrate LumenVox Speech Suite with Avaya Aura® Experience Portal. LumenVox Speech Suite includes Automatic Speech Recognizer (ASR), Text-to-Speech (TTS), and Call Progress Analysis (CPA). CPA uses advanced ASR technology to determine whether the call has been connected to a live person or an automated recording system. LumenVox Speech Suite used Media Resource Control Protocol (MRCP) Version 2 to interface to Avaya Aura® Experience Portal.

2. General Test Approach and Test Results

Interoperability compliance testing included feature and serviceability testing. The feature testing focused on placing calls to Experience Portal to invoke sample VXML applications that use LumenVox ASR and TTS. 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. In addition, LumenVox CPA capabilities were exercised by sending various audio types. (e.g., human and answering machine) directly to the ASR engine and verifying that the audio type was correctly detected. The was performed via a utility run via the Linux command line on the LumenVox server.

The serviceability testing focused on verifying the ability of the LumenVox Speech Suite recovering from adverse conditions, such as simulating loss to IP network and rebooting the LumenVox and Experience Portal.

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.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in this DevConnect Application Note included the enablement of supported encryption capabilities in the Avaya products only (private network side). Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Avaya systems and the LumenVox did not include use of any specific encryption features.

2.1. Interoperability Compliance Testing

The interoperability compliance testing covered the following features and functionality:

- Experience Portal and LumenVox Speech Suite communicating via MRCP V2.
- Calls to Experience Portal that invoke sample VXML applications and utilize LumenVox ASR and TTS.
- Male and female TTS voices and TTS prosody to change rate, volume, and pitch of the TTS voice.
- Sample VXML applications that use inline built-in, menu, and external SRGS grammars.
- DTMF processing performed by LumenVox ASR.
- Proper response from LumenVox Speech Suite when an invalid voice or DTMF entry was provided by the user based on the grammar.
- Proper response from LumenVox Speech Suite when no input was provided by the user.
- The use of LumenVox CPA to determine if a call was connected to a live person or answering machine. This was performed by using a utility at the Linux command prompt to feed a specific audio type directly to LumenVox ASR and verifying that audio type was detected correctly.
- LumenVox is not a standard option when configuring the speech server in Experience Portal. To allow LumenVox to be displayed as an option in the Speech Engine dropdown box, the **languages.properties** files in Experience Portal were modified. This replaced one of the pre-existing speech engine options.
- Proper system recovery after a restart of the LumenVox server and loss of IP connectivity.

2.2. Test Results

All test cases passed with the following observations:

- To accommodate LumenVox as an option for the Speech Server configuration in Experience Portal, two languages.properties files in Experience Portal were modified (refer to Section 5.1). These changes may have to be implemented again after an Experience Portal major release upgrade. This change replaces one of the pre-existing speech engine options.
- Custom TTS voices (i.e., en-US Jackie F and en-US Chris M) were added to the languages.properties_lib file in Appendix 1.

2.3. Support

For technical support on LumenVox Speech Suite, contact LumenVox:

■ Phone: +1 (858) 707-7700 and ask for "Technical Support"

• Web: https://www.lumenvox.com/support/

■ Email: support@LumenVox.com

3. Reference Configuration

Figure 1 illustrates the sample configuration used for testing. In this configuration, Experience Portal connected to Session Manager via a SIP trunk and interfaced to the LumenVox Speech Suite via MRCP V2. Sample VXML applications were hosted in an application server coresident with Experience Portal on the EPM server.

Calls were placed from Avaya H.323 and SIP Deskphones to Experience Portal and routed through Communication Manager and Session Manager. The G450 Media Gateway and the Media Server were used for media resources and System Manager was used to configure Session Manager and SIP users.

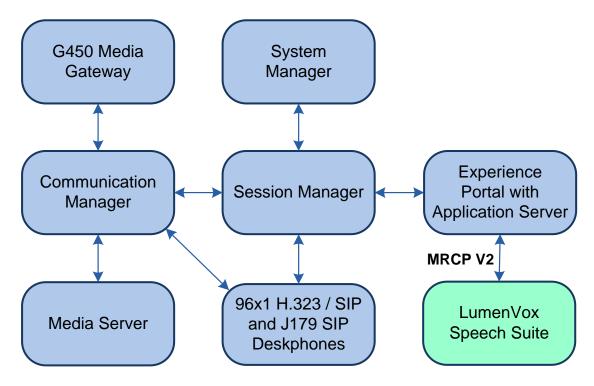


Figure 1: Configuration with Avaya Aura® Experience Portal and LumenVox Speech Suite

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager	8.1.3.0.1-FP3P1
Avaya G450 Media Gateway	FW 41.24.0
Avaya Aura® Media Server	v.8.0.2.138
Avaya Aura® System Manager	8.1.3.0 Build No. – 8.1.0.0.733078 Software Update Revision No: 8.1.3.0.1012091 Feature Pack 3
Avaya Aura® Session Manager	8.1.3.0.813014
Avaya Aura® Experience Portal	7.2.3
Avaya 96x1 Series Deskphones	6.8502 (H.323) 7.1.11.0.8 (SIP)
Avaya J100 Series Deskphones	4.0.7.1.5
LumenVox Speech Suite running on CentOS 7.9	18.0.450

5. Configure Avaya Aura® Experience Portal

This section covers the configuration of Experience Portal using the Experience Portal Manager (EPM) web interface or an Experience Portal SSH connection. The procedure includes the following areas:

- Update languages.properties Files
- Launch Experience Portal Manager
- Add Speech Servers
- Add Application

5.1. Update languages.properties Files

LumenVox doesn't appear in the Engine Type drop-down list when adding it as a speech server on Experience Portal. Therefore, two **languages.properties** files need to be updated on the Experience Portal on the EPM server. The files are available in the **Appendices** of these Application Notes.

Note: \$CATALINA_HOME is the default Tomcat directory, /opt/Tomcat/tomcat.

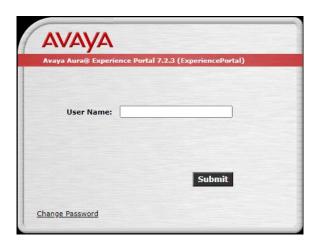
- Copy the new files to the EPM server. The files will be named:
 - o languages.properties_lib
 - o languages.properties_webapps
- Log into Experience portal via SSH.
- Switch user to a privileged administrator account with permissions to make these changes.
- Use **cd \$CATALINA_HOME/lib/config** to change to the appropriate directory.
- Rename the current languages.properties file to save the original file (e.g., mv languages.properties languages.properties.orig).
- Copy languages.properties_lib to this directory and rename it as **languages.properties** (e.g., **mv languages.properties_lib languages.properties**).
- Use **chown avayavp languages.properties** to set the correct owner for this file.
- Use **chgrp avayavpgroup languages.properties** to set the correct group for this file.
- Use chmod 750 languages.properties to set the correct permissions.
- Next, use cd \$CATALINA_HOME/webapps/VoicePortal/WEB-INF/classes/messages/ to change the directory for the location of the next file.
- Rename the current languages.properties file (e.g., mv languages.properties languages.properties.orig).
- Copy languages.properties_webapps to this directory and rename it as languages.properties (e.g., mv languages.properties_webapps languages.properties).
- Use chown avayavp languages.properties to set the correct owner for this file.
- Use **chgrp avayavpgroup languages.properties** to set the correct group for this file.
- Use chmod 750 languages.properties to set the correct permissions.

Tomcat must now be restarted.

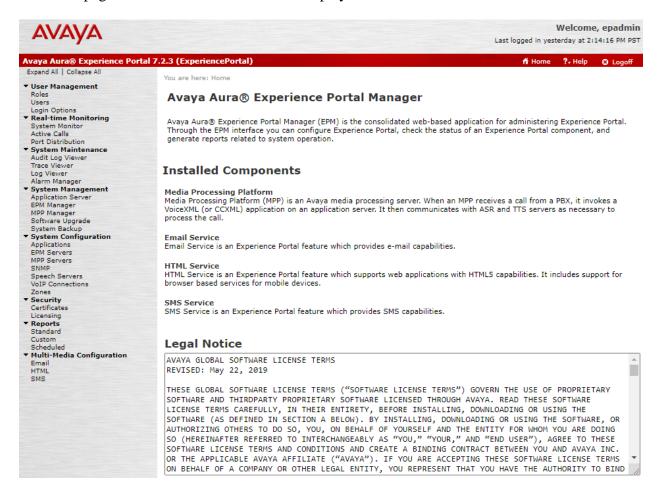
- Use cd \$CATALINA_HOME/bin to change directory and enter:
 - o ./shutdown.sh
- Wait for the first command to complete, and then enter:
 - o ./startup.sh

5.2. Launch Experience Portal Manager

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.



The main page of the EPM web interface is displayed as shown below.



5.3. Add Speech Servers

This section covers the configuration of LumenVox Speech Suite as ASR and TTS servers in Experience Portal.

5.3.1. Add ASR Server

To add an ASR server, navigate to **System Configuration** → **Speech Servers** in the left pane. In the **Speech Servers** page (not shown), select the **ASR** tab and click **Add**. Configure the following parameters in the **Add ASR Server** page.

■ Name: Provide a descriptive name (e.g., *LumenVox ASR*).

Enable: Select **Yes** to enable the ASR server.

Engine Type: Set to LumenVox. Option available per Section 5.1.
 Network Address: Set to LumenVox IP address (e.g., 10.64.102.102).
 Base Port: Set to SIP port configured on LumenVox (e.g., 5060).

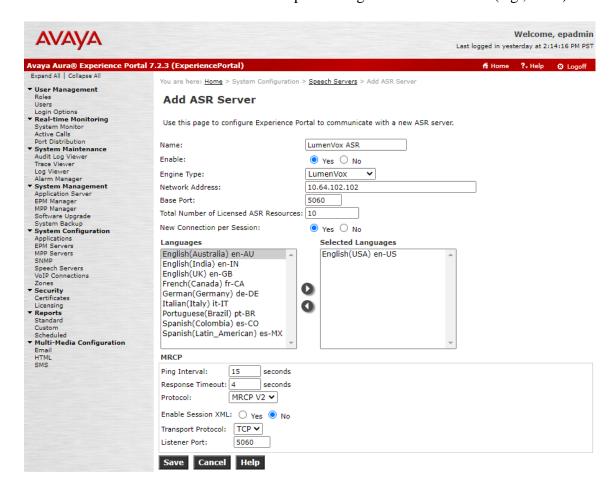
Total Number of Licensed

ASR Resources: Set to number of ASR resources per license.

Selected Languages: Set to English(USA) en-US supported by LumenVox.

Protocol: Set to MRCP V2.Transport Protocol: Set to TCP.

• **Listener Port:** Set to SIP port configured on LumenVox (e.g., 5060).



5.3.2. Add TTS Server

To add a TTS server, navigate to **Speech Configuration** → **Speech Servers** on the left pane. In the **Speech Servers** page (not shown), select the **TTS** tab and click **Add**. Configure the following parameters in the **Add TTS Server** page.

• Name: Provide a descriptive name (e.g., *LumenVox TTS*).

Enable: Select **Yes** to enable the TTS server.

Engine Type: Set to LumenVox. Option available per Section 5.1.
 Network Address: Set to LumenVox IP address (e.g., 10.64.102.102).
 Base Port: Set to SIP port configured on LumenVox (e.g., 5060).

Total Number of Licensed

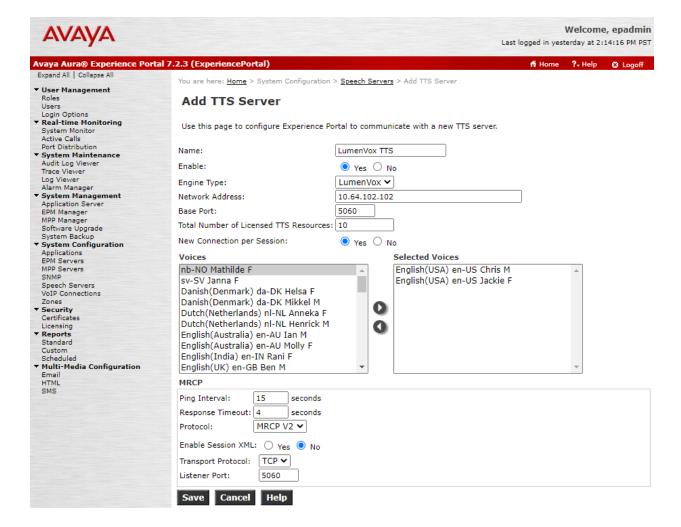
ASR Resources: Set to number of ASR resources per license.

Selected Voices: Select supported TTS voices.

• **Protocol:** Set to *MRCP V2*.

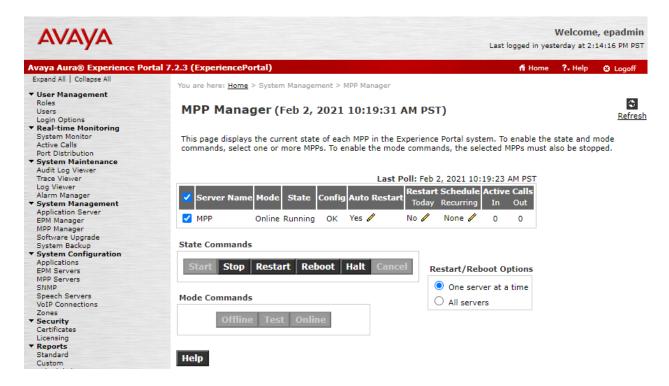
■ **Transport Protocol:** Set to *TCP*.

• **Listener Port:** Set to SIP port configured on LumenVox (e.g., 5060).



5.3.3. Restart MPP Server

Navigate to **System Management** → **MPP Manager** to restart the MPP server. Select the MPP and then click **Restart**. After the MPP is started, the **Mode** of the MPP should be *Online* and the **State** should be *Running*.



5.4. Add Application

This section covers the configuration of a sample VXML application that uses ASR and TTS resources from LumenVox Speech Suite.

On the left pane, navigate to **System Configuration** \rightarrow **Applications**. The **Applications** page is displayed (not shown). Click **Add**. In the **Add Application** page shown below, configure the application. For the compliance test, one of the sample VXML applications was configured as shown below.

• Name: Provide a descriptive name (e.g., *DevConnect Test*).

Enable: Set to **Yes** to enable the application.

• **Type:** Set to *VoiceXML*.

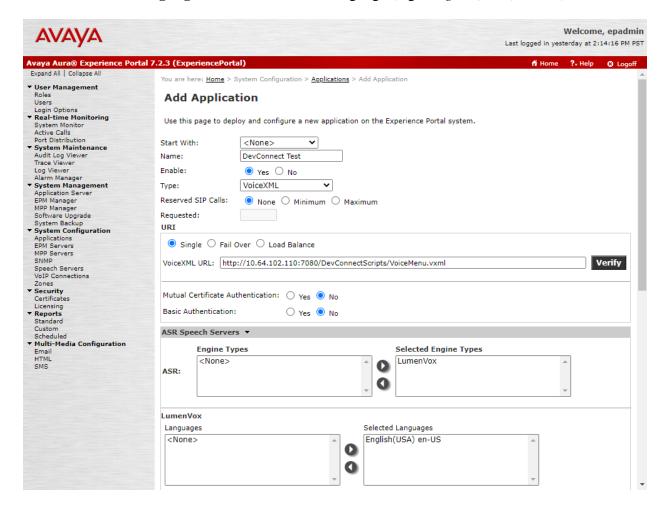
• VoiceXML URL: Specify the VXML application URL. For the compliance

test, the application was located in an application server co-

resident on the EPM server.

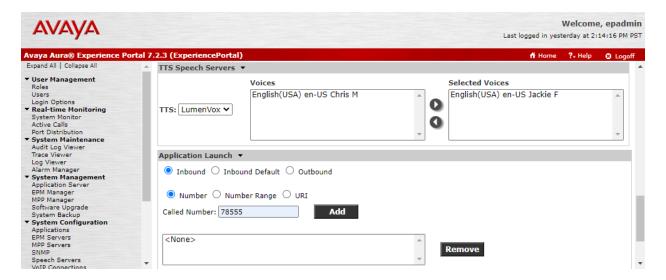
Selected Engine Types: Select LumenVox.

• **Selected Languages:** Select the language (e.g., *English(USA) en-US*).

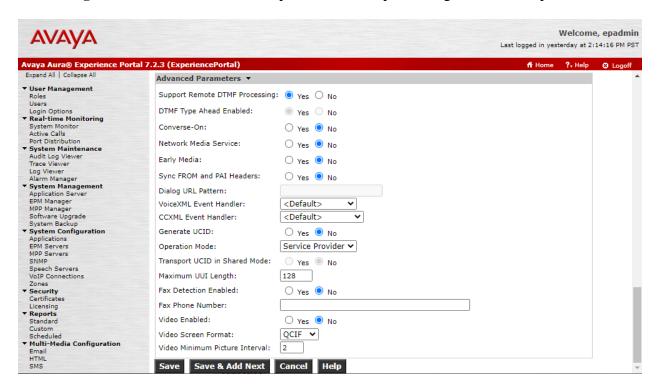


Scroll down to the TTS Speech Servers section. Select *LumenVox* as the TTS server and select a supported TTS voice (e.g., *English(USA) en-US Jackie F*) as shown below.

In the **Application Launch** section, set the **Called Number** (e.g., 78555) associated with the application and click **Add**. The called number will be added to the text below the field.



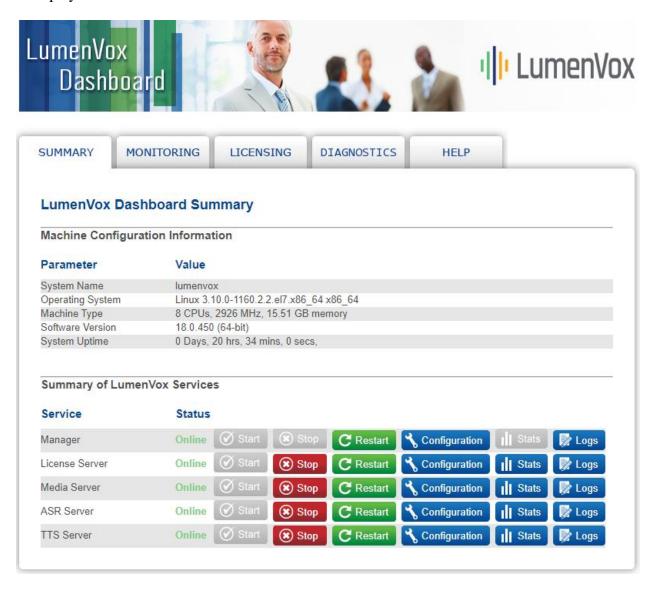
Scroll down and expand the **Advanced Parameters** section. Enable **Support Remote DTMF Processing** to allow LumenVox ASR to perform DTMF processing instead of Experience Portal.



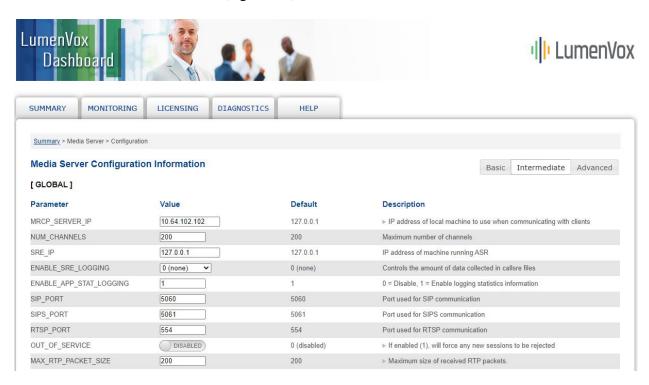
6. Configure LumenVox Speech Suite

This section covers the configuration for LumenVox Speech Suite. For the compliance test, the configuration was performed from the **LumenVox Dashboard** using a web browser. Alternatively, the configuration may be performed by modifying the **/etc/lumenvox/media_server.conf** file.

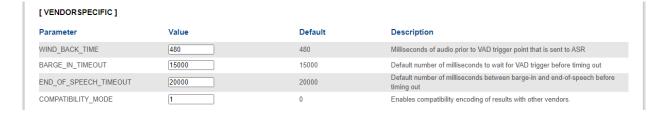
To launch the LumenVox Dashboard, enter **https://<ip-addr>:8080** as the URL in a web browser, where <*ip-addr>* is the IP address of the LumenVox server. The main Dashboard page is displayed as shown below.



To configure the **Media Server**, click the **Configuration** button associated with it. Select the **Intermediate** view in the upper right-hand corner. In the **GLOBAL** section, set **MRCP_SERVER_IP** to the IP address of the LumenVox server (e.g., 10.64.102.102) and use the default value of **SIP_PORT** (e.g., 5060).



Scroll down to the **VENDOR SPECIFIC** section and set **COMPATIBILITY_MODE** to '1'. This is required so that LumenVox responses are encoded as expected by Experience Portal. Click **Update Settings** and then **Restart Service** (not shown).



7. Verification Steps

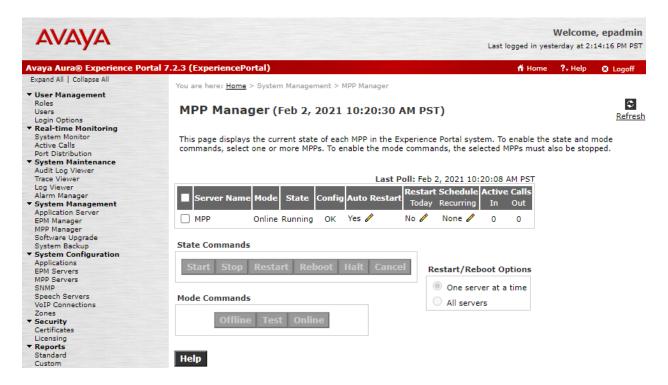
This section provides the tests that can be performed to verify proper configuration of Experience Portal and LumenVox Speech Suite.

After performing the verification in this section, place a call to an Experience Portal number that would launch a VXML application that uses the LumenVox ASR and TTS resources. Verify that the application answers the call, TTS prompts are heard, and voice/DTMF input is recognized.

7.1. Avaya Aura® Experience Portal

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

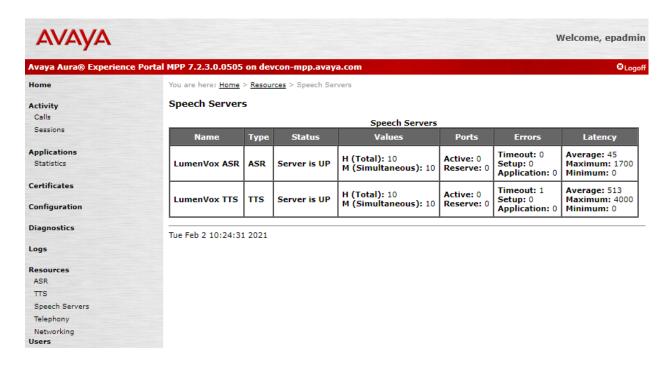
From the EPM web interface, verify that the MPP server is online by navigating to **System**Management → MPP Manager. The Mode of the MPP should be *Online* and the **State** should be *Running*.



From the EPM web interface, verify that the ports on the MPP server are in service in the by navigating to **Real-time Monitoring → Port Distribution** and selecting the MPP in the **Port Distribution** page (not shown).



Verify that the **Speech Servers** are UP. Navigate to **Real-time Monitoring** \rightarrow **System Monitor** and select the **ExperiencePortal Details** tab. Click on the **MPP**. In the **MPP Details** page, click **Service Menu**. Finally, navigate to **Resources** \rightarrow **Speech Servers** in the left pane to view the status of the speech servers as shown below. The **Status** of the speech servers should be UP as shown below.



7.2. LumenVox Speech Suite

LumenVox Dashboard Diagnostics allows users to perform a series of diagnostic tests and check the configuration of the LumenVox services along with other options.

LumenVox Dashboard is available via a web browser using https://<ip-address>:8080, where <ip-address> is the IP Address of LumenVox server.

To verify that LumenVox is configured properly, launch the **LumenVox Dashboard** and select the **DIAGNOSTICS** tab. In the **DIAGNOSTICS** tab, click **Run Diagnostic Tests**. This will run a series of network checks, configuration checks, and functional tests, and provide a report with the results.



(**Optional**) If necessary, for debugging purposes only, the LumenVox debugging level can be increased by clicking on **Debug Logging Verbosity** in the **DIAGNOSTICS** tab. This would allow more detailed TTS and ASR logs in the /var/log/lumenvox/ directory, such as the TTS log in ./ttsserver/tts_server_app.txt log file and the ASR log in

./mediaserver/mediaserver_app.txt log file. Click on Default Logging Verbosity in the Diagnostics tab to restore the debugging level to the default again. Debugging Logging Verbosity shouldn't remain enabled in production systems.

8. Conclusion

These Application Notes describe the configuration steps required to integrate LumenVox Speech Suite with Avaya Aura® Experience Portal using MRCP V2. Sample VXML applications that use various grammar types were used to verify LumenVox ASR and TTS. All feature and serviceability test cases were completed successfully with observations noted in **Section 2.2**.

9. Additional References

This section references the Avaya documentation relevant to these Application Notes.

[1] *Administering Avaya Aura*® *Experience Portal*, Release 7.2.3, Issue 1, September 2019, available at https://support.avaya.com.

LumenVox documentation is available at https://www.lumenvox.com/knowledgebase.

10. APPENDIX 1: languages.properties_lib

This file should replace **languages.properties** file in the **\$CATALINA_HOME/lib/config** directory in the EPM server. Note that the text in **bold** were either added for LumenVox or commented out to remove a pre-existing speech engine.

```
# Engine Type options displayed on the page
asrEngines=LumenVox,Loquendo,Google Speech,Dialogflow
#asrEngines=Loquendo, Nuance, Google Speech, Dialogflow
ttsEngines=LumenVox, Loquendo
#ttsEngines=Loquendo, Nuance
asrEnginesAmsOnly=Nuance
ttsEnginesAmsOnly=Nuance
# Engine Type conversion from display to internal data in the database
IBMWVSASR=ibm wvs
IBMWVSTTS=ibm wvs
#NuanceASR=nuance osr
#NuanceTTS=nuance realspeak
LoquendoASR=loquendo
LoquendoTTS=loquendo
GoogleSpeechASR=googleasr
DialogflowASR=dialogflowasr
LumenVoxASR=nuance osr
LumenVoxTTS=lumenvox tts
# Engine Type conversion from internal data in the database to display
ibmwvs=IBM WVS
nuanceosr=LumenVox
#nuanceosr=Nuance
#nuancerealspeak=Nuance
#nuancequantum=Nuance
loquendo=Loquendo
googleasr=Google Speech
dialogflowasr=Dialogflow
lumenvoxtts=LumenVox
# Languages
NuanceASRlanguages=af-za,ar-jo,ar-ww,as-in,eu-ES,bn-bd,bn-in,bh-in,bg-bg,cn-HK,ca-
ES, hr-HR, cs-CZ, da-DK, nl-BE, nl-nl, en-au, en-gb, en-in, en-SG, en-ZA, en-us, fi-FI, fr-BE, fr-
ca,fr-FR,gl-ES,gu-IN,de-at,de-DE,de-CH,el-GR,he-IL,hi-IN,hu-HU,is-IS,id-ID,it-IT,ja-
JP, kn-IN, ko-KR, ms-MY, ml-IN, zh-cn, zh-tw, mr-IN, ne-NP, no-NO, or-IN, pl-PL, pt-br, pt-PT, pa-
IN, ro-RO, ru-RU, sr-rs, sk-SK, sl-SL, es-ar, es-CO, es-ES, es-us, sv-SE, sv-fi, ta-IN, te-IN, th-
TH, tr-TR, uk-UA, ur-IN, ur-PK, va-ES, vi-VN, cy-gb
IBMWVSASRlanguages=zh-CN, en-GB, en-AU, en-US, fr-CA, de-DE, ja-JP, es-MX, es-ES
LoquendoASRlanguages=ca-ES,zh-CN,nl-NL,en-US,en-GB,fr-FR,de-DE,el-GR,it-IT,pl-PL,pt-
BR, pt-PT, ru-RU, es-AR, es-CL, es-CO, es-MX, es-ES, es-US, sv-SE
LumenVoxASRlanguages=en-US,en-AU,en-GB,en-IN,es-MX,es-CO,fr-CA,pt-BR,de-DE,it-IT
# TTS LANGUAGE
NuanceTTSlanguages=ar-WW Laila F,ar-WW Maged M,ar-WW Tarik M,eu-ES Miren F,eu-ES
Arantxa F,bq-BG Daria F,ca-ES Jordi M,ca-ES Montserrat F,ca-ES Nuria F,zh-HK Sin-Ji
F,zh-CN Li-li F,zh-CN Mei-Ling F,zh-CN Tian-Tian F,zh-CN Ting-Ting F,cs-CZ Iveta F,cs-
CZ Zuzana F,da-DK Ida F,da-DK Magnus M,da-DK Sara F,da-DK Nanna F,nl-BE Ellen F,nl-NL
Claire F,nl-NL Claire-ml F,nl-NL Xander M,en-AU Karen F,en-AU Lee M,en-GB Daniel M,en-
GB Emily F,en-GB Serena F,en-GB Kate F,en-GB Malcolm M,en-GB Oliver M,en-GB Stephanie
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F,en-IN Sangeeta F,en-IN Rishi M,en-IN Veena F,en-IE Moira F,af-ZA Tessa F,en-SC Fiona
F,en-US Allison F,en-US Ava F,en-US Ava-ml F,en-US Ethan M,en-US Evelyn F,en-US Nathan
M,en-US Susan F,en-US Evan M,en-US Zoe F,en-US Donna F,en-US Erica F,en-US Jennifer
F,en-US Jill F,en-US Lisa F,en-US Samantha F,en-US Tom M,en-US Vicky F,fi-FI Onni
F,fi-FI Satu F,fi-FI Mikko F,fr-CA Amelie F,fr-CA Chantal F,fr-CA Nicolas M,fr-CA
Felix M,fr-CA Julie F,fr-FR Audrey-ml F,fr-FR Aurelie F,fr-FR Thomas M,fr-FR Audrey
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F,de-DE Anna-ml F,gr-GR Melina F,gr-GR Nikos M,gr-GR Alexandros M,he-IS Carmit F,hi-IN
Lekha F, hi-IN Neel M, hu-HU Mariska F, is-IS Ragga F, id-ID Damayanti F, it-IT Alice F, it-
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Paolo M,it-IT Silvia F,ja-JP Otoya M,ja-JP Kyoko F,ko-KR Sora F,ko-KR Narae F,zh-TW
Mei-Ling F, zh-TW Mei-Jia F, zh-TW Ya-Ling F, no-NO Henrik M, no-NO Nora F, no-NO Stine
F,pl-PL Agata F,pl-PL Ewa F,pl-PL krzysztof M,pl-PL Zosia F,pt-BR Felipe M,pt-BR
Luciana F, pt-BR Raquel F, pt-PT Catarina F, pt-PT Joana F, pt-PT Joaqium M, pt-PT Madalena
F,ro-RO Ioana F,ru-RU Katya-F,ru-RU Katya-ml F,ru-RU Katerina F,ru-RU Milena F,ru-RU
Yuri M,en-ZA Tessa F,es-AR Diego M,es-CO Carlos M,es-CO Soledad F,es-ES Jorge M,es-ES
Marisol F,es-ES Monica-ml F,es-ES Diego M,es-ES Isabel F,es-ES Monica F,es-MX Angelica
F,es-MX Juan M,es-MX Javier M,es-MX Paulina F,sk-SK Laura F,sv-SE Klara F,sv-SE Ingrid
F,sv-SE Oskar M,sv-SE Alva F,th-TH Kanya F,th-TH Narisa F,tr-TR Aylin F,tr-TR Cem
M,tr-TR Cem-ml M,tr-TR Yelda F,va-ES Empar F
IBMWVSTTSlanguages=zh-CN Zhou-Hong F,en-US Andrew M,en-US Allison F,en-US Julie F,en-
US Lisa F, en-US Tyler F, en-GB David M, en-GB Kate F, en-GB Sally F, en-GB Dawn F, fr-CA
Pierre M, fr-CA Louise F, de-DE Dieter M, de-DE Erika F, ja-JP Daichi M, ja-JP Shizuka
F, es-MX Rafael M, es-MX Sofia F
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F,nl-NL Willelm M,en-GB Simon M,en-GB Kate F,en-GB Elizabeth F,en-US Allison F,en-US
Dave M,en-US Susan F,en-US Kenneth M,fr-FR Bernard M,fr-FR Juliette F,fr-FR Sophie
F,de-DE Stefan M,de-DE Katrin F,de-DE Ulrike F,el-GR Afroditi F,el-GR Artemis F,it-IT
Giulia F,it-IT Luca M,it-IT Paola F,it-IT Fabio M,it-IT Marcello M,it-IT Matteo M,it-
IT Roberto M, it-IT Silvana F,pl-PL Zosia F,pt-PT Amalia F,pt-PT Eusebio M,pt-BR
Gabriela F,ru-RU Dmitri M,ru-RU Olga F,es-ES Jorge M,es-ES Carmen F,es-ES Juan M,es-CO
Carlos M,es-AR Diego M,es-CL Francisca F,es-MX Esperanza F,es-US Carlos M,es-US
Soledad F,es-US Ximena F,sv-SE Annika F
LumenVoxTTSlanguages=en-US Amanda F,en-US Jackie F,en-US Kim F,en-US Lindsey F,en-US
Leah F,en-US Alvin M,en-US Andrew M,en-US Chris M,en-US Justin M,en-GB Chloe F,en-GB
Megan F,en-GB Gwendolyn F,en-GB Ben M,en-GB Gavin M,en-AU Molly F,en-AU Ian M,en-IN
Rani F,da-DK Helsa F,da-DK Mikkel M,de-DE Heidi F,de-DE Lukas M,es-ES Martina F,es-ES
Antonio M,es-US Lorena F,es-US Luis M,fr-FR Margot F,fr-FR Jean M,fr-CA Elodie F,pt-PT
Catina F,pt-PT Adriano M,pt-BR Giovanna F,pt-BR Gustavo M,nl-NL Anneka F,nl-NL Henrick
M,nb-NO Mathilde F,is-IS Birta F,is-IS Isak M,it-IT Emilia F,it-IT Angelo M,pl-PL
Agnieszka F,pl-PL Ewa F,pl-PL Karolina F,pl-PL Jacek M,pl-Pl Jakub M,ro-RO Irina F,ru-
RU Nikita F,ru-RU Vasili M,sv-SV Janna F,tr-TR Sevi F,cy-GB Gwendolyn F,cy-GB Gavin
M,en-US Rebecca F,en-US Jason M,en-GB Sophie F,es-MX Rita F
# Language Default
#NuanceASRlanguagesDefault=en-us
IBMWVSASRlanguagesDefault=en-US
LoquendoASRlanguagesDefault=en-US
LumenVoxASRlanguagesDefault=en-us
#NuanceTTSlanguagesDefault=en-US Jennifer F
IBMWVSTTSlanguagesDefault=en-US Andrew M
LoquendoTTSlanguagesDefault=en-US Dave M
LumenVoxTTSlanguagesDefault=en-US Jackie F
# default base port
#NuanceBasePort=4900
IBMWVSBasePort=554
```

```
LoquendoBasePort=554
LumenVoxBasePort=5060
# default New Connection per Session
#NuancePerPort=No
IBMWVSPerPort=Yes
LoquendoPerPort=Yes
LumenVoxPerPort=Yes
# default URL
IBMWVSRtspUrlAsr=/media/recognizer
IBMWVSRtspUrlTts=/media/synthesizer
#NuanceRtspUrlAsr=/media/speechrecognizer
#NuanceRtspUrlTts=/media/speechsynthesizer
LoquendoRtspUrlAsr=/media/recognizer
LoquendoRtspUrlTts=/media/synthesizer
LumenVoxRtspUrlAsr=/media/recognizer
LumenVoxRtspUrlTts=/media/synthesizer
# Grammar Type
ibmwvsGrammarType=srgs
#nuanceosrGrammarType=srgs
#nuancequantumGrammarType=srgs
loquendoGrammarType=sisr
lumenvoxasrGrammarType=srgs
# MRCP Protocol
IBMWVSMRCPValues=mrcpv1
#NuanceMRCPValues=mrcpv1, mrcpv2
LoquendoMRCPValues=mrcpv1
#NuanceMRCPAmsOnlyValues=mrcpv1,mrcpv2
LumenVoxMRCPValues=mrcpv1, mrcpv2
# Transport
IBMWVSTransportValues=tcp
#NuanceTransportValues=tcp,tls
LoquendoTransportValues=tcp
LumenVoxTransportValues=tcp,tls
# Resources
#NuanceASRResourcesDefault=asrAcquireCallStartRetain
IBMWVSASRResourcesDefault=asrAcquireCallStartRetain
LoquendoASRResourcesDefault=asrAcquireCallStartRetain
GoogleSpeechResourcesDefault=asrAcquireReleaseAsNeeded
DialogflowResourcesDefault=asrAcquireReleaseAsNeeded
LumenVoxASRResourcesDefault=asrAcquireCallStartRetain
# Google Speech Engine
configureGoogleSpeechNetworkAddress=false
configureGoogleSpeechBasePort=false
configureGoogleSpeechTotalLicensed=false
configureGoogleSpeechPerPort=false
configureGoogleSpeechLanguages=false
configureGoogleSpeechResources=false
```

```
configureGoogleSpeechNBestListLength=false
configureGoogleSpeechSpeechTimeouts=false
configureGoogleSpeechMRCP=false
configureGoogleSpeechCredentials=true
configureGoogleSpeechProfanity=true
configureGoogleSpeechLicense=true
# Google Dialogflow
configureDialogflowNetworkAddress=false
configureDialogflowBasePort=false
configureDialogflowTotalLicensed=false
configureDialogflowPerPort=false
configureDialogflowLanguages=false
configureDialogflowResources=false
configureDialogflowNBestListLength=false
configureDialogflowSpeechTimeouts=false
configureDialogflowMRCP=false
configureDialogflowCredentials=true
configureDialogflowProjectParameters=true
# AVB XML:Language
# Please follow the ASR LOCALIZATION INSTRUCTIONS mentioned above.
avbLanguageLabels=af-za,ar-jo,ar-ww,as-in,eu-ES,bn-bd,bn-in,bh-in,bg-bg,cn-HK,ca-
ES, hr-HR, cs-CZ, da-DK, nl-BE, nl-nl, en-au, en-gb, en-in, en-SG, en-ZA, en-us, fi-FI, fr-BE, fr-
ca, fr-FR, ql-ES, qu-IN, de-at, de-DE, de-CH, el-GR, he-IL, hi-IN, hu-HU, is-IS, id-ID, it-IT, ja-
JP, kn-IN, ko-KR, ms-MY, ml-IN, zh-cn, zh-tw, mr-IN, ne-NP, no-NO, or-IN, pl-PL, pt-br, pt-PT, pa-
IN, ro-RO, ru-RU, sr-rs, sk-SK, sl-SL, es-ar, es-CO, es-ES, es-us, sv-SE, sv-fi, ta-IN, te-IN, th-
TH, tr-TR, uk-UA, ur-IN, ur-PK, va-ES, vi-VN, cy-gb
# The following is for internal software to decide which default value to use for
Speech Complete Timeout in application advanced parameters.
# If Nuance, the default value is "0", otherwise, the default is "";
IBM=ibm wvs
LOQUENDO=loquendo
#
       Default engine type for speech servers
#defaultEngineType=Nuance
defaultEngineType=LumenVox
```

11. APPENDIX 2: languages.properties_webapps

This file should replace languages.properties file in the

\$CATALINA_HOME/webapps/VoicePortal/WEB-INF/classes/messages directory in the EPM server. Note that the text in **bold** were either added for LumenVox or commented out to remove a pre-existing speech engine.

```
#{{START:LANGUAGES:VOICEPORTAL
#{{START:PROPERTIES:VOICEPORTAL 5.0
# THIS SECTION IS SPECIFIC TO VOICEPORTAL 5.0
# 1. DO NOT ADD ANY NEW PROPERTIES TO THIS SECTION. INSTEAD ADD THEM TO VERSION
SPECIFIC SECTION.
# 2. TO MODIFY A PRE-EXISTING PROPERTY, MOVE IT TO VERSION SPECIFIC SECTION AND THEN
MODIFY IT
# 3. TO DELETE A PRE-EXISTING PROPERTY, MOVE IT TO VERSION SPECIFIC SECTION AND THEN
COMMENT IT OUT.
NoASR=No ASR
NoTTS=No TTS
defaultNetworkAddress=<Network Address>
# MRCP Protocol
IBMWVSMRCPLabels=MRCP V1
#NuanceMRCPLabels=MRCP V1, MRCP V2
LoquendoMRCPLabels=MRCP V1
#NuanceMRCPAmsOnlyLabels=MRCP V1, MRCP V2
LumenVoxMRCPLabels=MRCP V1,MRCP V2
mrcpv1=MRCP V1
mrcpv2=MRCP V2
# Transport Protocol
IBMWVSTransportLabels=TCP
#NuanceTransportLabels=TCP,TLS
LoquendoTransportLabels=TCP
LumenVoxTransportLabels=TCP, TLS
tcp=TCP
tls=TLS
af-za=Afrikaans (South Africa)
en-us=English (USA)
cn-hk=Cantonese (Hong Kong)
ca-es=Catalan(Spain)
zh-hk=Chinese (Cantonese)
cs-cz=Czech (Czech Republic)
da-dk=Danish (Denmark)
nl-be=Dutch (Belgium)
nl-nl=Dutch(Netherlands)
en-au=English (Australia)
en-in=English(India)
en-ie=English(Irish)
en-gb=English(UK)
en-sq=English (Singapore)
en-sc=English(Scottish)
eu-es=Basque(Spain)
```

```
es-co=Spanish (Colombia)
fi-fi=Finnish (Finland)
fr-be=French (Belgium)
fr-ca=French (Canada)
fr-fr=French(France)
de-at=German (Austria)
de-ch=German(Switzerland)
de-de=German (Germany)
el-gr=Greek (Greece)
gr-gr=Greek
he-il=Hebrew(Israel)
hi-in=Hindi(India)
hu-hu=Hungarian (Hungary)
id-id=Indonesian(Indonesia)
is-is=Icelandic
it-it=Italian(Italy)
ja-jp=Japanese (Japan)
ko-kr=Korean (Korea)
zh-cn=Mandarin (China)
zh-tw=Mandarin (Taiwan)
no-no=Norwegian (Norway)
pl-pl=Polish(Poland)
pt-br=Portuguese (Brazil)
pt-pt=Portuguese (Portugal)
ru-ru=Russian (Russia)
sl-sl=Slovene (Slovenia)
es-ar=Spanish (Argentina)
es-es=Spanish(Spain)
es-mx=Spanish(Latin American)
es-us=Spanish(USA)
sk-sk=Slovak(Slovakia)
sv-fi=Swedish (Swedish Finland)
sv-se=Swedish(Sweden)
th-th=Thai(Thailand)
tr-tr=Turkish (Turkey)
es-cl=Spanish(Chile)
#}}END:PROPERTIES:VOICEPORTAL 5.0
#{{START:PROPERTIES:VOICEPORTAL 5.1
# THIS SECTION IS SPECIFIC TO VOICEPORTAL 5.1
# 1. ADD ANY NEW PROPERTIES FOR VOICEPORTAL 5.1 TO ADDITIONS SECTION WITHIN 5.1
SECTION.
# 2. TO MODIFY A PRE-EXISTING PROPERTY, MOVE IT TO MODIFICATIONS SECTION WITHIN 5.1
AND THEN MODIFY IT.
# 3. TO DELETE A PRE-EXISTING PROPERTY, MOVE IT TO DELETIONS SECTION WITHIN 5.1 AND
THEN COMMENT IT OUT.
#{{START:PROPERTIES:VOICEPORTAL_5.1:ADDITIONS
# Specify any new properties for Voice Portal 5.1 here.
#}}END:PROPERTIES:VOICEPORTAL 5.1:ADDITIONS
#{{START:PROPERTIES:VOICEPORTAL 5.1:MODIFICATIONS
# Specify properties modified in Voice Portal 5.1 here.
#}}END:PROPERTIES:VOICEPORTAL 5.1:MODIFICATIONS
#{{START:PROPERTIES:VOICEPORTAL 5.1:DELETIONS
# Specify and comment out properties deleted in Voice Portal 5.1 here.
#}}END:PROPERTIES:VOICEPORTAL 5.1:DELETIONS
#}}END:PROPERTIES:VOICEPORTAL 5.1
#{{START:PROPERTIES:EXPERIENCEPORTAL 6.0
```

```
# THIS SECTION IS SPECIFIC TO EXPERIENCE 6.0
# 1. ADD ANY NEW PROPERTIES FOR EXPERIENCE 6.0 TO ADDITIONS SECTION WITHIN 6.0
SECTION.
# 2. TO MODIFY A PRE-EXISTING PROPERTY, MOVE IT TO MODIFICATIONS SECTION WITHIN 6.0
AND THEN MODIFY IT.
# 3. TO DELETE A PRE-EXISTING PROPERTY, MOVE IT TO DELETIONS SECTION WITHIN 6.0 AND
THEN COMMENT IT OUT.
#{{START:PROPERTIES:EXPERIENCEPORTAL 6.0:ADDITIONS
# Specify any new properties for Experience Portal 6.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 6.0:ADDITIONS
#{{START:PROPERTIES:EXPERIENCEPORTAL 6.0:MODIFICATIONS
# Specify properties modified in Experience Portal 6.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 6.0:MODIFICATIONS
#{{START:PROPERTIES:EXPERIENCEPORTAL 6.0:DELETIONS
# Specify and comment out properties deleted in Experience Portal 6.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 6.0:DELETIONS
#}}END:PROPERTIES:EXPERIENCEPORTAL 6.0
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.0
# THIS SECTION IS SPECIFIC TO EXPERIENCE 7.0
# 1. ADD ANY NEW PROPERTIES FOR EXPERIENCE 7.0 TO ADDITIONS SECTION WITHIN 7.0
SECTION.
# 2. TO MODIFY A PRE-EXISTING PROPERTY, MOVE IT TO MODIFICATIONS SECTION WITHIN 7.0
AND THEN MODIFY IT.
# 3. TO DELETE A PRE-EXISTING PROPERTY, MOVE IT TO DELETIONS SECTION WITHIN 7.0 AND
THEN COMMENT IT OUT.
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.0:ADDITIONS
# Specify any new properties for Experience Portal 7.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.0:ADDITIONS
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.0:MODIFICATIONS
# Specify properties modified in Experience Portal 7.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.0:MODIFICATIONS
#{{START:PROPERTIES:EXPERIENCEPORTAL_7.0:DELETIONS
# Specify and comment out properties deleted in Experience Portal 7.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.0:DELETIONS
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.0
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.0.1.0
# THIS SECTION IS SPECIFIC TO EXPERIENCE 7.0.1.0
# 1. ADD ANY NEW PROPERTIES FOR EXPERIENCE PORTAL 7.0.1.0 TO THE ADDITIONS SECTION
WITHIN 7.0.1.0 SECTION.
   Whenever you add a new display string to the English properties files, also add
the string to xxx ab YZ.properties file with
     couple of Chinese characters in Unicode form.
     Ex: If a new display string "welcomeTitle=Welcome, {0}" is added to
common.properties,
         add new entry "welcomeTitle=\u6b22\u8fce Welcome, {0}" to
common ab YZ.properties file.
# 2. TO MODIFY AN EXISTING PROPERTY, MODIFY THE EXISTING PROPERTY IN THE ORIGINAL
LOCATION.
# 3. TO DELETE AN EXISTING PROPERTY, COMMENT IT OUT.
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.0.1.0:ADDITIONS
# Specify any new properties for Experience Portal 7.0.1.0 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.0.1.0:ADDITIONS
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.0.1.0
```

```
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.1.0.0
# THIS SECTION IS SPECIFIC TO EXPERIENCE 7.1.0.0
# 1. ADD ANY NEW PROPERTIES FOR EXPERIENCE PORTAL 7.1.0.0 TO THE ADDITIONS SECTION
WITHIN 7.1.0.0 SECTION.
   Whenever you add a new display string to the English properties files, also add
the string to xxx ab YZ.properties file with
     couple of Chinese characters in Unicode form.
     Ex: If a new display string "welcomeTitle=Welcome, {0}" is added to
common.properties,
        add new entry "welcomeTitle=\u6b22\u8fce Welcome, {0}" to
common ab YZ.properties file.
# 2. TO MODIFY AN EXISTING PROPERTY, MODIFY THE EXISTING PROPERTY IN THE ORIGINAL
# 3. TO DELETE AN EXISTING PROPERTY, COMMENT IT OUT.
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.1.0.0:ADDITIONS
# Specify any new properties for Experience Portal 7.1.0.0 here.
ar-jo=Arabic(Jordan)
ar-ww=Arabic(WorldWide)
as-in=Assamese (India)
bg-bg=Bulgarian (Bulgaria)
bh-in=Bhojpuri(India)
bn-bd=Bengali(Bengladesh)
bn-in=Bengali(India)
cy-gb=Welsh (United Kingdom)
en-za=English(South Africa)
gl-es=Galician(Spain)
qu-in=Gujarati(India)
he-is=Hebrew(Israel)
hr-hr=Croatian(Croatia)
is-is=Icelandic(Iceland)
it-it=Italian(Italy)
ja-jp=Japanese (Japan)
kn-in=Kannada(India)
ml-in=Malayalam (India)
mr-in=Marathi(India)
ms-my=Malay (Malaysia)
ne-np=Nepali(Nepal)
or-in=Oriya(India)
pa-in=Punjabi(India)
ro-ro=Romanian(Romania)
sr-rs=Serbian (Republic of Serbia)
ta-in=Tamil(India)
te-in=Telugu(India)
uk-ua=Ukrainian(Ukraine)
ur-in=Urdu(India)
ur-pk=Urdu (Pakistan)
va-es=Valencian(Spain)
vi-vn=Vietnamese (Vietnam)
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.1.0.0:ADDITIONS
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.1.0.0
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.2
# THIS SECTION IS SPECIFIC TO EXPERIENCE 7.2
# 1. ADD ANY NEW PROPERTIES FOR EXPERIENCE PORTAL 7.2 TO THE ADDITIONS SECTION WITHIN
# 2. TO MODIFY AN EXISTING PROPERTY, MODIFY THE EXISTING PROPERTY IN THE ORIGINAL
LOCATION.
```

```
# 3. TO DELETE AN EXISTING PROPERTY, COMMENT IT OUT.
#{{START:PROPERTIES:EXPERIENCEPORTAL 7.2:ADDITIONS
# Specify any new properties for Experience Portal 7.2 here.
#}}END:PROPERTIES:EXPERIENCEPORTAL 7.2:ADDITIONS
#}}END:PROPERTIES:EXPERIENCEPORTAL_7.2
#}}END:LANGUAGES:VOICEPORTAL
# Voice Portal Extensions must include their own START and END tags in this section.
# The START tag of a VP Extension must be of the form
#{{START:LANGUAGESEXTENSIONS:<Extension Name>.
# The END tag of a VP Extension must be of the form
#}}END:LANGUAGES:EXTENSIONS:<Extension Name>.
# Each VP Extension must add their languages display strings between their START and
END tags.
# Each VP Extension installer must
     Add their section between #{{START:LANGUAGESU:EXTENSIONS and
#}}END:LANGUAGES:EXTENSIONS tags if their section does not exist in this file. (Fresh
install)
     Replace their section between #{{START:LANGUAGES:EXTENSIONS and
#}}END:LANGUAGES:EXTENSIONS section if their section already exists in this file. (Re-
install or upgrades)
#{{START:LANGUAGES:EXTENSIONS
#}}END:LANGUAGES:EXTENSIONS
```

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