

Avaya Solution & Interoperability Test Lab

Application Notes for Cedat 85 Speech Suite V5 with Avaya Aura® Experience Portal 7.2 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Cedat 85 Speech Suite with Avaya Aura® Experience Portal. Cedat 85 Speech Suite comprise of Automatic Speech Recognition (ASR) and CereProc Text-To-Speech (TTS). Cedat 85 ASR uses the Media Resource Control Protocol (MRCP) version 2 for its ASR features to interface with VoiceXML (VXML) applications running on the Avaya Aura® Experience Portal 7.2. Voice Prompt will be synthesized via CereProc TTS using MRCP version 1 which interface with VXML applications running on the 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 Cedat 85 Speech Suite with Avaya Aura® Experience Portal 7.2. Cedat 85 Speech Suite comprise of Automatic Speech Recognition (ASR) and CereProc Text-To-Speech (TTS). The Cedat 85 ASR interoperate with Avaya Experience Portal via Media Resource Control Protocol (MRCP) version 2 protocol to obtain and process the speech input and produce a grammar-independent raw transcription to be forwarded to the semantic engine which will generate the next voice prompt, synthesized via MRCP version 1 by Cedat 85 CereProc TTS. The semantic computation and Natural Language Understanding (NLU) generation will be dedicated to third party and hence will not be tested here. This solution is used in the development of a conversational agent in the medical reservation domain.

2. General Test Approach and Test Results

The general test approach is to manually make calls from Communication Manager to the incoming number of Experience Portal applications which in turn launch the speech applications. The appropriate voice responses are observed. Session details are also checked from the Experience Portal for the correct behavior according to the written vxml scripts, and system monitor are checked for any abnormality.

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 these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. 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 Cedat 85 Speech Suite did not include use of any specific encryption features as requested by Cedat 85.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to Media Processing Platform (MPP) server in the Experience

Portal system. These calls are used to verify speech recognition with barge in, time-out, resources unavailable, as well as simultaneous calls. As for TTS, calls are make to verify TTS synthesis such as voice prompt for short and long duration, barge in, time-out, different voices and languages, different speed, pitch and volume, as well as simultaneous calls.

The serviceability testing focused on verifying the ability of the speech solution to recover from adverse conditions, such as power failures and disconnecting cables to the IP network, Experience Portal system restarts, and Communication Manager restarts.

2.2. Test Results

All test cases are successfully completed.

2.3. Support

For technical support on Cedat 85 speech suite, contact the Cedat 85 S.r.l. at:

Phone: +39 06.68134164Email: cedat85@cedat85.com

3. Reference Configuration

Figure 1 illustrates the test configuration used to verify the Cedat 85 speech suite. Both Cedat ASR and CereProc TTS runs on CentOS servers. VoiceXML scripts and VoiceXML applications were installed on an Application Server and accessed by Avaya Aura® Experience Portal. Avaya Aura® Experience Portal which comprises of Experience Portal Manager (EPM) and Media Processing Platform (MPP) are connected to Avaya Aura® Session Manager, Avaya Aura® System Manager and a duplex pair of Avaya Aura® Communication Manager; all running on VMware 6.x and a Avaya G430 Media Gateway. Avaya 9600 Series H.323 Deskphones and J100 Series SIP Deskphones were used to place SIP VoIP calls to Avaya Aura® Experience Portal, which would run the VoiceXML scripts and applications. The applications would then use Cedat ASR for speech recognition and CereProc TTS for synthesizing Text-To-Speech.

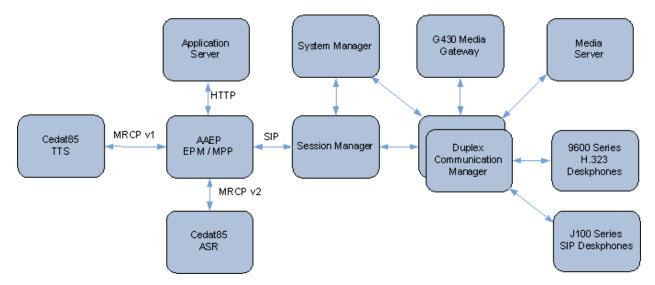


Figure 1: Test Configuration

4. Equipment and Software Validated

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

Equipment	Software	
Avaya Aura® Communication Manager	8.0.1	
Avaya Aura® Experience Portal	7.2.1	
Avaya G430 Media Gateway	40.25.0	
Avaya Aura® Media Server	8.0.0.183	
Avaya Aura® System Manager	8.0.1	
Avaya Aura® Session Manager	8.0.1	
Avaya 9600 Series H.323 Deskphones	6.8003	
Avaya J100 Series SIP Deskphones	4.0.0.0.21	
Cedat 85 ASR running on CentOS 6.9	5.3	
CedatUniMRCP Server	1.4	
Cedat 85 CereProc TTS Server running on CentOS 7.0	5.0.1	
CPUniMRCP Server	5.0.1	

Note – The Avaya Aura® servers and Cedat 85 servers used in the reference configuration and shown on the table were deployed on a virtualized environment. These Avaya components ran as virtual machines over VMware® (ESXI 6.X) platforms.

5. Configure Avaya Communication Manager

The configuration of the SIP Trunks between Communication Manager and Session Manager, and the routing of calls to Experience Portal are assumed to be in place and will not be discussed here. This section provides the additional procedures to configure Communication Manager for the purpose of administering Cedat 85 Speech Suite. The configuration is performed via the System Access Terminal (SAT).

Step	Description							
1.	Enter the change ip-codec-set n command where n is a valid IP codec-set associated with							
	the IP network region that is used by Experience Portal, typically the IP network region							
	assigned to the Session Manager SIP Trunk signaling group. Set Audio Codec to an							
	appropriate value supported by Avaya Experience Portal and Cedat 85. In this							
	configuration, the G.711Mu and G.711A codecs were used.							
	, , , ,					1 6		
	change ip-coded	c-set 6			Pag	e 1 of	2	
		IP	MEDIA PAR	AMETERS				
	Codec Set: 6							
	Audio	Silence	Frames	Packet				
	Codec	Suppression	Per Pkt	Size(ms)				
	1: G.711MU	n	2	20 20				
	2: G.711MU 3:	n	2	20				
	4:							
	5:							
	6:							
	7:							
	Media Enci		Encrypted	l SRTCP: best-effor	t			
	1: none							
	2:							
	3: 4:							
	5:							

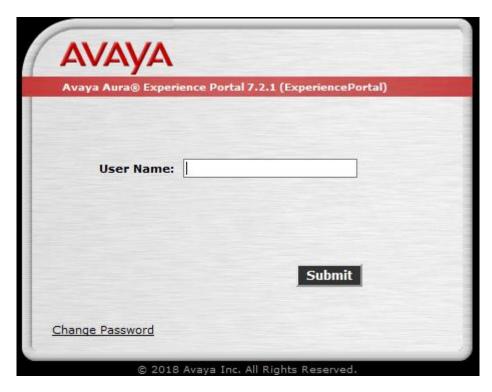
6. Configure Avaya Aura® Experience Portal

The initial administration of Experience Portal and the configuration of the SIP VoIP connection to Session Manager are assumed to be in place and will not be discussed here. This section covers the additional procedures of Experience Portal that is required for the purpose of administering Cedat 85 Speech Suite. The following steps will be covered:

- Login to Experience Portal Manager (EPM)
- Configuring the VoIP Audio Format
- Add Cedat 85 ASR and CereProc TTS server
- Add Applications

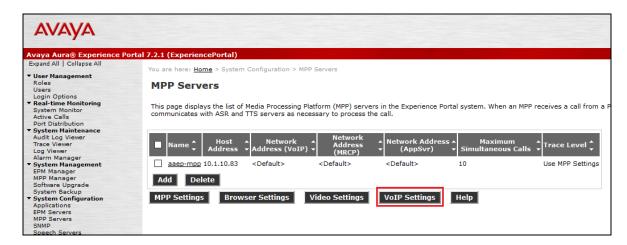
6.1. Login to Experience Portal Manager (EPM)

Avaya Experience Portal is configured via the EPM web interface. To access the web interface, enter <a href="https://<ip-addr>/VoicePortal/">https://<ip-addr>/VoicePortal/ as the URL in an internet browser, where <ip-addr> is the IP address of the EPM. Log in using an account with the Administration role to display the main page.

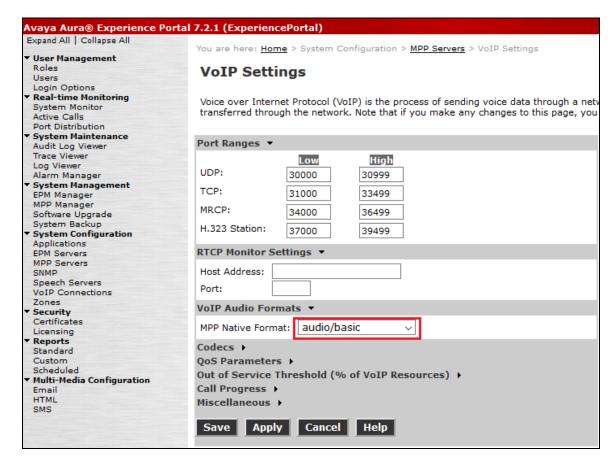


6.2. Configure the VoIP Audio Format

To configure the codec used by the Media Processing Platform (MPP) server, click **System** Configuration → MPP Servers in the left pane and click VoIP Settings.



Set **MPP Native Format** to **audio/basic** to configure the MPP server for G.711 mu-law and G.711 A-Law to match the configuration on Communication Manager in **Section 5**.

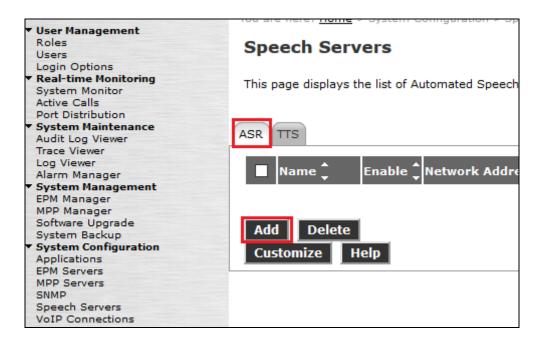


Click on the **Codecs** and ensure the **Order** match for **Offer** and **Answer**. Scroll down the page and click **Save**.

Avaya Aura® Experience Porta	l 7.2.1 (ExperiencePortal)				
Expand All Collapse All	VoIP Settings				
▼ User Management Roles Users Login Options ▼ Real-time Monitoring	Voice over Internet Protocol (VoIP) is the process of sending voice data through a net transferred through the network. Note that if you make any changes to this page, you				
System Monitor Active Calls Port Distribution	Port Ranges 🔻				
Y System Maintenance Audit Log Viewer Trace Viewer Log Viewer Alarm Manager	UDP: 30000 30999 TCP: 31000 33499 MRCP: 34000 36499				
▼ System Management EPM Manager MPP Manager Software Upgrade	H.323 Station: 37000 39499				
System Backup ▼ System Configuration Applications EPM Servers MPP Servers	RTCP Monitor Settings ▼ Host Address: Port:				
SNMP Speech Servers VoIP Connections Zones	VoIP Audio Formats ▼ MPP Native Format: audio/basic ∨				
▼ Security Certificates	Codecs ▼				
Licensing ▼ Reports	Offer				
Standard Custom Scheduled ▼ Multi-Media Configuration Email HTML SMS	Enable Codec Order ✓ G711uLaw 1 ✓ G711aLaw 2 ☐ G729				
	Packet Time: 20 v milliseconds				
	G729 Discontinuous Transmission: Yes No				
	Answer				
	Enable Codec Order ☑ G711uLaw 1 ☑ G711aLaw 1 ☑ G729 1				
	G729 Discontinuous Transmission: O Yes O No				
	G729 Reduced Complexity Encoder: Yes O No				

6.3. Add Speech Servers

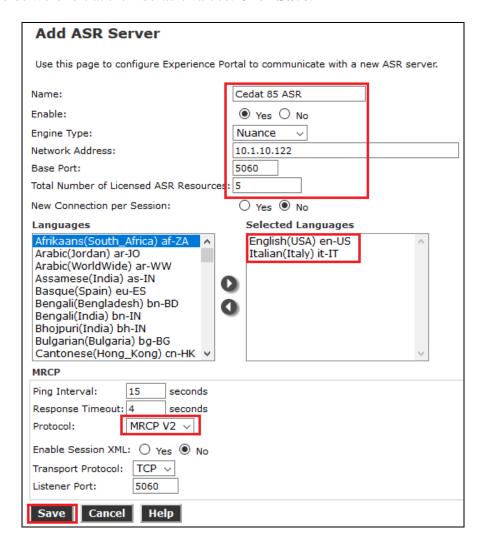
To configure the Cedat 85 speech servers, click **System Configuration** → **Speech Servers**. Select the **ASR** tab and click **Add**.



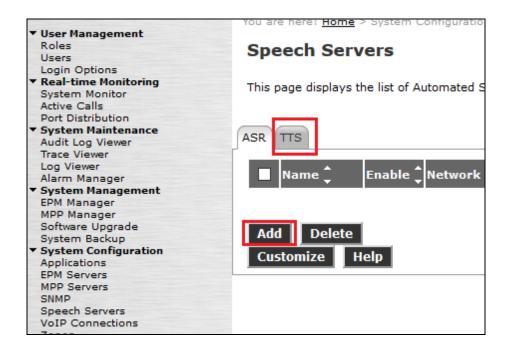
In the **Add ASR Server** page, select **Nuance** as the **Engine Type**. Specify the appropriate **Name**, select **Yes** to **Enable**, set **Network Address** to the IP address or Full FQDN of the Cedat 85 ASR server. Set the **Base Port** to 5060. The **Total Number of Licensed ASR Resources** should also be set to the number of licenses available on the Cedat 85 ASR server.

Select the **Languages** to use by highlighting them and move to the right box. In the **MRCP** section, set **Protocol** to **MRCP V2**.

All other fields were left at their default values. Click **Save**.



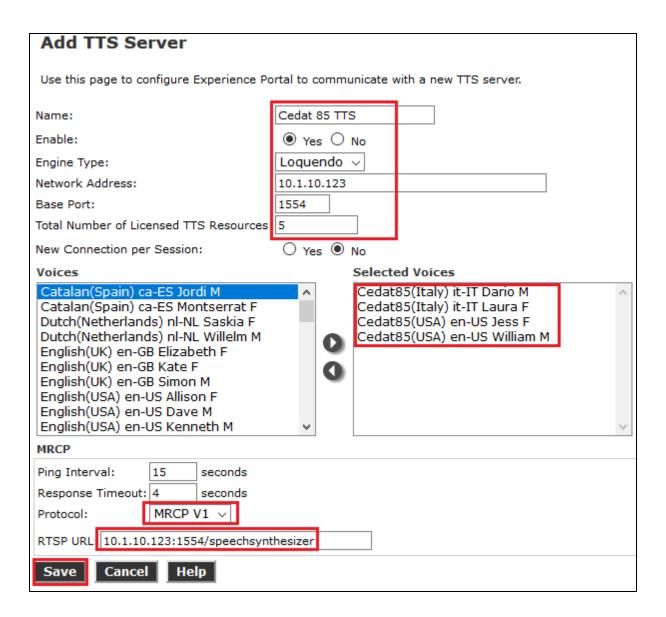
To configure the Cedat 85 CereProc TTS server, click **System Configuration** → **Speech Servers**. Select the **TTS** tab and click **Add**.



In the **Add TTS Server** page, select **Loquendo** as the **Engine Type**. Specify the appropriate **Name**, select **Yes** to **Enable**, set **Network Address** to the IP address or Full FQDN of the Cedat 85 CereProc TTS server. Set the **Base Port** to **1554**. The **Total Number of Licensed TTS Resources** should also be set to the number of licenses available on the Cedat 85 CereProc TTS server.

Select the **Languages** to use by highlighting them and move to the right box. In the **MRCP** section, set **Protocol** to **MRCP V1**. Set the **RTSP URL** to "<Network Address of TTS server>/<directory>".

All other fields were left at their default values. Click **Save**.

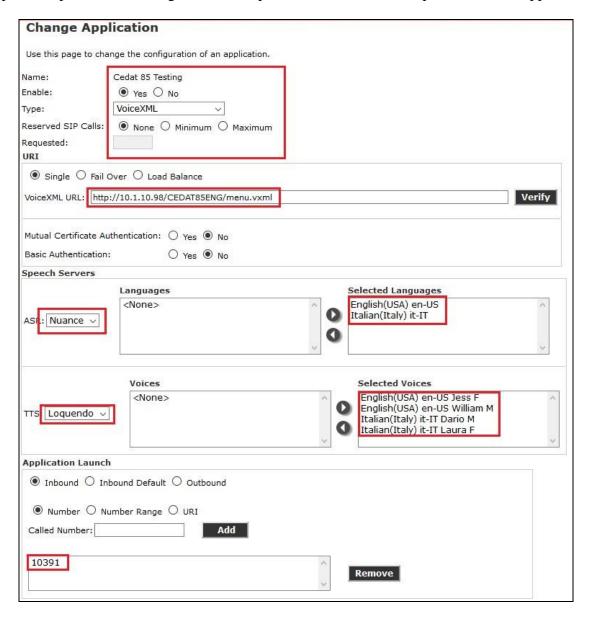


6.4. Add Applications

To assign Cedat 85 to an Experience Portal application, click **System Configuration** → **Applications** and then click **Add** on the Applications page (not shown). The **Change Application** page shown on the next page highlights the configuration changes.

This configuration assigns the Experience Portal test application deployed on the http server to the called number 10391. Specify the Name, select Yes to Enable, set Type to VoiceXML for the MIME and set VoiceXML URL to HTTP server address location of the VoiceXML script. Select Nuance for ASR and Loquendo for TTS then highlight the appropriate Languages to use.

Repeat this procedure to assign Cedat 85 Speech Servers to other Experience Portal applications.



7. Configure Cedat 85 Speech Suite

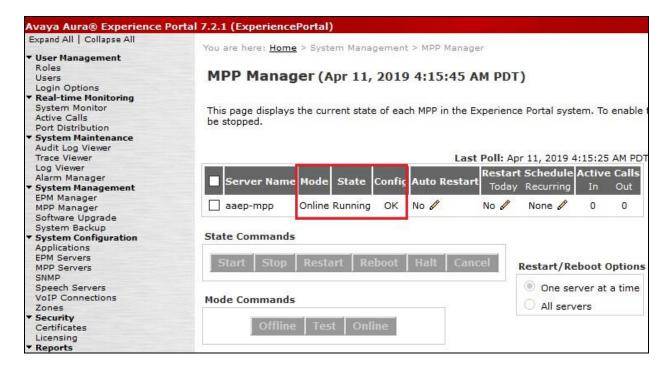
The Cedat 85 ASR Server and CereProc TTS installation were done by Cedat 85 engineers which will not be detailed here. In this compliance testing, Cedat 85 ASR server runs on CentOS 6.9 whereas Cedat 85 CereProc TTS server runs on CentOS 7.0.

8. Verification Steps

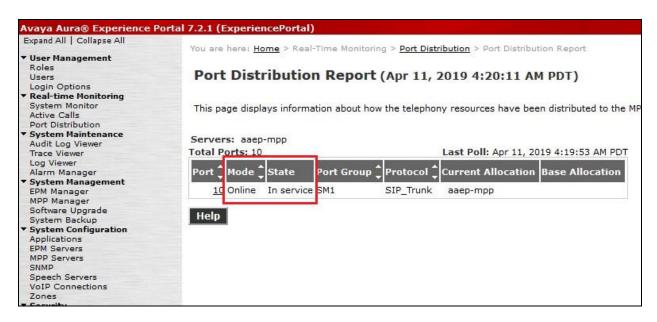
This section provides the verification steps that may be performed to verify that Experience Portal can run VoiceXML applications that use the iFlyTek Server for ASR functionalities.

8.1. Verify Avaya Aura® Experience Portal

From the Experience Portal Manager web interface, click **System Management** → **MPP Manager**. On the MPP Manager page, verify that the MPP server is **Online**, **Running** and **Config** is **OK**.

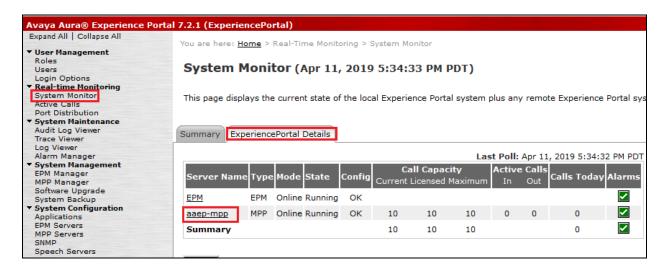


From the Experience Portal Manager web interface, click **Real-Time Monitoring** → **Port Distribution** (not shown). Select the appropriate MPP server and click **OK**. On the **Port Distribution Report** page, verify that the **State** of the ports of the MPP server is **In service** and the **Mode** is **Online**.

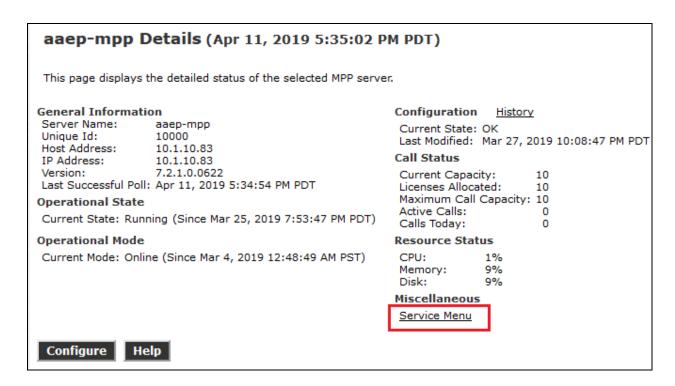


8.2. Verify Cedat 85 Speech Suite

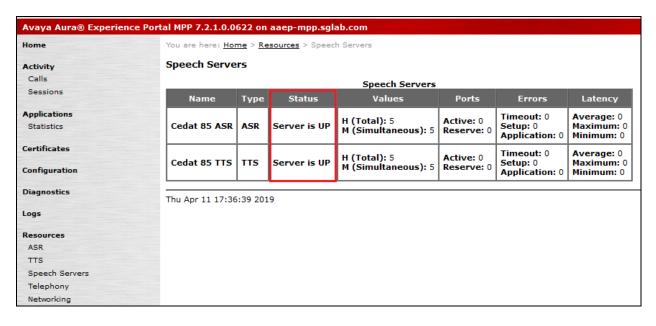
Check the connection of the speech servers to the MPP. From the Experience Portal Manager web interface, click **Real-Time Monitoring** → **System Monitor**.



Click on the appropriate MPP which in this test there is only 1 used i.e., **aaep-mpp** and then the **Service Menu** on the next page.



From the MPP home page shown below, click **Resources** \rightarrow **Speech Servers**. Verify that both the Cedat 85 ASR and CereProc TTS **Status** are **Server is UP** for both servers.



Place a call to Experience Portal that runs a VoiceXML script which uses the Cedat 85 ASR Server for speech recognition and Cedat 85 CereProc TTS Server for Text-To-Speech. Verify that the application recognizes the speech of the caller and is able to synthesize the text in the VXML scripts.

9. Conclusion

These Application Notes describe the configuration steps required for Cedat 85 Speech Suite with Avaya Aura® Experience Portal. Cedat 85 Speech Suite comprise of Automatic Speech Recognition (ASR) and CereProc Text-To-Speech (TTS). All feature and serviceability test cases were completed successfully.

10. Additional References

The following documents are available at http://support.avaya.com.

- [1] Administering Avaya Aura® Experience Portal, Release 7.2.1, Issue 1, March 2018.
- [2] *Administering Avaya Aura*® *Communication Manager*, Release 8.0.1, Issue 3, December 2018.
- [3] Administering Avaya Aura® Session Manager, Release 8.0, Issue 2, December 2018.

The Cedat 85 Speech Suite documents can be obtained by contacting Cedat 85 S.r.l. as per **Section 2.3**.

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