



Avaya Solution & Interoperability Test Lab

Application Notes for ReadSpeaker speechServer MRCP 2.16 with Avaya Aura® Experience Portal 8.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for ReadSpeaker speechServer MRCP 2.16 to interoperate with Avaya Aura® Experience Portal 8.0. ReadSpeaker speechServer MRCP is a Text-to-Speech engine.

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.

1. Introduction

These Application Notes describe the configuration steps required for ReadSpeaker speechServer MRCP 2.16 to interoperate with Avaya Aura® Experience Portal 8.0. ReadSpeaker is a Text-to-Speech (TTS) engine.

In the compliance testing, ReadSpeaker used Media Resource Control Protocol (MRCP) version 2 to provide TTS capabilities for Experience Portal.

2. General Test Approach and Test Results

The feature test cases were performed manually with incoming calls from PSTN and Avaya H.323 and SIP endpoints to Experience Portal to invoke sample VXML applications that used ReadSpeaker for TTS.

The serviceability test cases were performed manually by disconnecting/reconnecting the Ethernet connection to ReadSpeaker.

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 testing associated with these Application Notes, the interfaces between Avaya systems and ReadSpeaker did not include use of any specific encryption features as requested by ReadSpeaker.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on ReadSpeaker:

- Communication with Experience Portal via MRCP V2.
- Support of TTS capability invoked by incoming calls to sample VXML applications on Experience Portal.
- Support of TTS male and female voices and prosody with varying rate, volume, and pitch.

The serviceability testing focused on verifying the ability of ReadSpeaker to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to ReadSpeaker.

2.2. Test Results

All test cases were executed and verified. The following were observations on ReadSpeaker from the compliance testing.

- With the Experience Portal default codec setting, the INVITE to ReadSpeaker offered G.729 codec first followed by G.711 variants. The current release of ReadSpeaker does not support G.729 codec and requires the G.729 codec to be either removed or be offered last by Experience Portal. In the compliance testing, the Experience Portal codec setting was configured to offer G.729 last, as shown in **Section 5.4**.
- By design, the ReadSpeaker speechServer service does not start automatically after a reboot. Customers will need to start the service manually or add a start script into systemd. The compliance testing used the manual start method.

2.3. Support

Technical support on ReadSpeaker can be obtained through the following:

- **Phone:** (877) 225-1306
- **Email:** support@readspeaker.com

3. Reference Configuration

The configuration used for the compliance testing is shown in **Figure 1**.

The detailed administration of basic connectivity between Communication Manager, Experience Portal, System Manager, and Session Manager are not the focus of these Application Notes and will not be described.

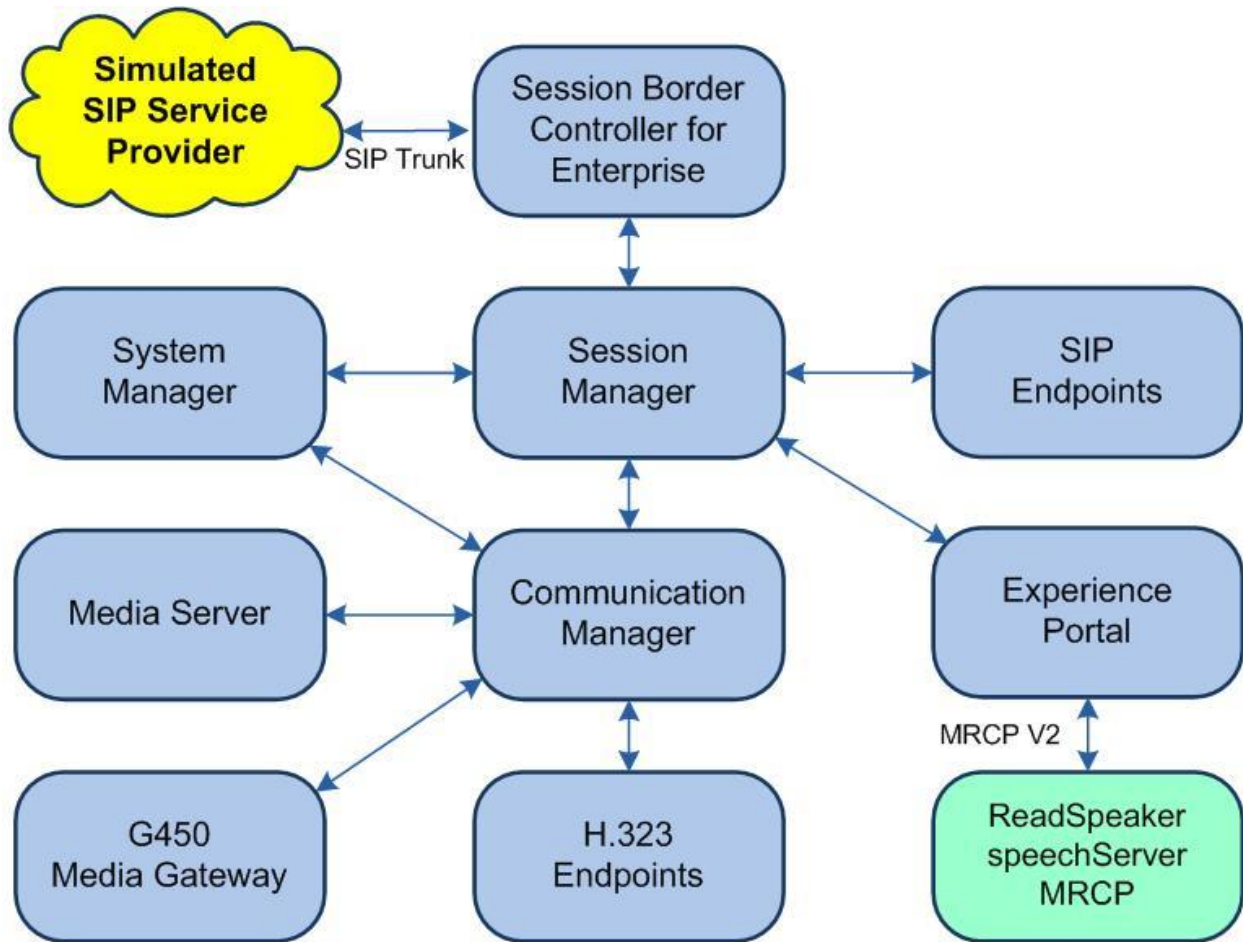


Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager in Virtual Environment	8.1.3 (8.1.3.0.1.890.26685)
Avaya G650 Media Gateway	NA
Avaya Aura® Media Server in Virtual Environment	8.0.2.138
Avaya Aura® Experience Portal in Virtual Environment	8.0 (8.0.0.0.1451)
Avaya Aura® Session Manager in Virtual Environment	8.1.3 (8.1.3.0.813014)
Avaya Aura® System Manager in Virtual Environment	8.1.3 (8.1.3.0.1012091)
Avaya Session Border Controller for Enterprise in Virtual Environment	8.1.2 (8.1.2.0-31-19809)
Avaya J179 IP Deskphone (H.323)	6.8502
Avaya J169 IP Deskphone (SIP)	4.0.7.1.5
ReadSpeaker speechServer MRCP on CentOS Linux	2.16.2.6 7.9.2009

5. Configure Avaya Aura® Experience Portal

This section provides the procedures for configuring Experience Portal. The procedures include the following areas:

- Launch Experience Portal Manager
- Administer TTS custom voices
- Administer TTS server
- Administer MPP VoIP settings
- Restart MPP server
- Administer TTS application

5.1. Launch Experience Portal Manager

Access the Experience Portal Manager (EPM) web interface by using the URL “https://ip-address” in an Internet browser window, where “ip-address” is the IP address of the EPM server. The screen below is displayed. Log in using the appropriate credentials.



The Avaya Experience Portal Manager screen is displayed next.



5.2. Administer TTS Custom Voices

Select **System Configuration** → **Speech Servers** from the left pane. In the **Speech Servers** screen (not shown), select the **TTS** tab, followed by **Customize**.

The **TTS Custom Voices** screen is displayed. Enter the pertinent values for the specified fields and retain the default values for the remaining fields.

- **Engine Type:** “Nuance”
- **Voice:** “English”
- **Country:** “USA”
- **Language Code:** “en-US”
- **Voice Name:** The pertinent voice name, in this case “Julie”.
- **Gender:** The pertinent gender, in this case “Female”.

Repeat the procedures in this section to add relevant custom voices with pertinent settings to use with ReadSpeaker. In the compliance testing, two custom voices **Julie** and **James** with different gender settings were configured, as shown below.

AVAYA Welcome
Last logged in today at 1:13:08 PM

Avaya Experience Portal 8.0.0 (ExperiencePortal) Home Help Logoff

Expand All | Collapse All

▼ User Management
Roles
Users
Login Options

▼ Real-time Monitoring
System Monitor
Active Calls
Port Distribution

▼ System Maintenance
Audit Log Viewer
Trace Viewer
Log Viewer
Alarm Manager

▼ System Management
Application Server
EPM Manager
MPP Manager
Software Upgrade
System Backup

▼ System Configuration
Applications
EPM Servers
MPP Servers
SNMP
Speech Servers
VoIP Connections
Zones

▼ Security
Certificates
Licensing

▼ Reports
Standard
Custom
Scheduled

▼ Multi-Media Configuration
Email

You are here: [Home](#) > [System Configuration](#) > [Speech Servers](#) > [TTS Custom Voices](#)

TTS Custom Voices

Use this page to add custom voices to the Text to Speech (TTS) servers currently administered on the Experience Portal system.

Engine Type:

Voices

New

Voice:

Country:

Language Code:

Voice Name:

Gender: ☐ Male ☒ Female

Add

Configured

Remove

Save Apply Cancel Help

5.3. Administer TTS Server

Select **System Configuration** → **Speech Servers** from the left pane. In the **Speech Servers** screen (not shown), select **Add**. The **Add TTS Server** screen is displayed. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Name:** A descriptive name.
- **Network Address:** IP address of the ReadSpeaker server.
- **Base Port:** A desired port, in this case “8000” as preferred by ReadSpeaker.
- **Selected Voices:** Select the two custom voices from **Section 5.2**.
- **Protocol:** “MRCP V2”
- **Listener Port:** A desired port, in this case “8002” as preferred by ReadSpeaker.

For **Total Number of Licensed TTS Resources**, enter the pertinent number of TTS license from ReadSpeaker, in this case “10”.

AVAYA Welcome
Last logged in today at 12:05:50 PM

Avaya Experience Portal 8.0.0 (ExperiencePortal) Home ? Help Logoff

Expand All | Collapse All

You are here: Home > System Configuration > Speech Servers > Add TTS Server

Add TTS Server

Use this page to configure Experience Portal to communicate with a new TTS server.

Name: ReadSpeaker

Enable: ☒ Yes ☐ No

Engine Type: Nuance

Network Address: 10.64.101.204

Base Port: 5060

Total Number of Licensed TTS Resources: 10

New Connection per Session: ☐ Yes ☒ No

Voices

- Afrikaans(South_Africa) af-ZA Tessa F
- Arabic(WorldWide) ar-WW Laila F
- Arabic(WorldWide) ar-WW Maged M
- Arabic(WorldWide) ar-WW Tarik M
- Basque(Spain) eu-ES Arantxa F
- Basque(Spain) eu-ES Miren F
- Bulgarian(Bulgaria) bg-BG Daria F
- Catalan(Spain) ca-ES Jordi M
- Catalan(Spain) ca-ES Montserrat F
- Catalan(Spain) ca-ES Nuria F

Selected Voices

- English(USA) en-US James M
- English(USA) en-US Julie F

MRCP

Ping Interval: 15 seconds

Response Timeout: 4 seconds

Protocol: MRCP V2

Enable Session XML: ☐ Yes ☒ No

Transport Protocol: TCP

Listener Port: 8002

Save Cancel Help

5.4. Administer MPP VoIP Settings

Select **System Configuration** → **MPP Servers** from the left pane. In the **MPP Servers** screen (not shown), select **VoIP Settings**.

The **VoIP Settings** screen is displayed. Expand the **Codecs** sub-section toward the bottom of the screen.

AVAYA

Welcome
Last logged in today at 1:13:08 PM

Avaya Experience Portal 8.0.0 (ExperiencePortal)

Expand All | Collapse All

Home ? Help Logoff

You are here: [Home](#) > System Configuration > [MPP Servers](#) > VoIP Settings

VoIP Settings

Voice over Internet Protocol (VoIP) is the process of sending voice data through a network using one or more standard protocols such as H.323 and Real-time Transfer Protocol (RTP). Use this page to configure parameters that affect how voice data is transferred through the network. Note that if you make any changes to this page, you must restart all MPPs.

	Low	High
UDP:	11000	30999
TCP:	31000	33499
MRCP:	34000	36499
H.323 Station:	37000	39499

RTCP Monitor Settings

Host Address:

Port:

VoIP Audio Formats

MPP Native Format:

Codecs

QoS Parameters

Out of Service Threshold (% of VoIP Resources)

Call Progress

Miscellaneous

Save Apply Cancel Help

In the expanded **Codecs Offer** sub-section, update the **Order** of the **Codec** to have G711 variants being first and second, and with G729 being third as shown below. Note that this configuration is required by ReadSpeaker for interoperability.

AVAYA Welcome
Last logged in today at 10:47:47 AM

Avaya Experience Portal 8.0.0 (ExperiencePortal) Home ? Help Logoff

Expand All | Collapse All

- ▼ **User Management**
 - Roles
 - Users
 - Login Options
- ▼ **Real-time Monitoring**
 - System Monitor
 - Active Calls
 - Port Distribution
- ▼ **System Maintenance**
 - Audit Log Viewer
 - Trace Viewer
 - Log Viewer
 - Alarm Manager
- ▼ **System Management**
 - Application Server
 - EPM Manager
 - MPP Manager
 - Software Upgrade
 - System Backup
- ▼ **System Configuration**
 - Applications
 - EPM Servers
 - MPP Servers
 - SNMP
 - Speech Servers
 - VoIP Connections
 - Zones
- ▼ **Security**
 - Certificates
 - Licensing
- ▼ **Reports**
 - Standard
 - Custom
 - Scheduled
- ▼ **Multi-Media Configuration**
 - Email
 - HTML
 - SMS
- ▼ **POM**
 - POM Home

Codecs ▼

Offer

Enable	Codec	Order
<input checked="" type="checkbox"/>	G711uLaw	1
<input checked="" type="checkbox"/>	G711aLaw	2
<input checked="" type="checkbox"/>	G729	3

Packet Time: 20 milliseconds

G729 Discontinuous Transmission: ☒ Yes ☐ No

Answer

Enable	Codec	Order
<input checked="" type="checkbox"/>	G711uLaw	1
<input checked="" type="checkbox"/>	G711aLaw	1
<input checked="" type="checkbox"/>	G729	1

G729 Discontinuous Transmission: ☐ Yes ☐ No ☒ Either

G729 Reduced Complexity Encoder: ☒ Yes ☐ No

QoS Parameters ▶

Out of Service Threshold (% of VoIP Resources) ▶

Call Progress ▶

Miscellaneous ▶

Save **Apply** **Cancel** **Help**

5.5. Restart MPP Server

Select **System Management** → **MPP Manager** from the left pane to display the **MPP Manager** screen.

Select the pertinent **MPP** entry and click **Restart**, as shown below.

AVAYA Welcome
Last logged in today at 1:13:08 PM EDT

Avaya Experience Portal 8.0.0 (ExperiencePortal) Home Help Logoff

Expand All Collapse All

▼ User Management
Roles
Users
Login Options

▼ Real-time Monitoring
System Monitor
Active Calls
Port Distribution

▼ System Maintenance
Audit Log Viewer
Trace Viewer
Log Viewer
Alarm Manager

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▼ Multi-Media Configuration
Email

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

MPP Manager (Jul 27, 2021 4:32:33 PM EDT)

[Refresh](#)

This page displays the current state of each MPP in the Experience 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: Jul 27, 2021 4:32:14 PM EDT

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

State Commands

Mode Commands

Restart/Reboot Options

☒ One server at a time
☐ All servers

[Help](#)

5.6. Administer TTS Application

Select **System Configuration** → **Applications** from the left pane. In the **Applications** screen (not shown), click **Add** to add a new application for testing with ReadSpeaker.

The **Add Application** screen is displayed. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Name:** A descriptive name.
- **VoiceXML URL:** The URL for the pertinent VXML test application.
- **TTS:** “Nuance”
- **Selected Voices:** Select the two custom voices from **Section 5.2**.
- **Called Number:** An available number to associate with the application.

AVAYA Welcome
Last logged in today at 1:13:08 PM

Avaya Experience Portal 8.0.0 (ExperiencePortal) Home ? Help Logoff

Expand All | Collapse All

▼ User Management
Roles
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Login Options

▼ Real-time Monitoring
System Monitor
Active Calls
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▼ System Maintenance
Audit Log Viewer
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▼ Multi-Media Configuration
Email
HTML
SMS

▼ POM
POM Home
POM Monitor

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

Add Application

Use this page to deploy and configure a new application on the Experience Portal system.

Start With:

Name:

Enable: ☒ Yes ☐ No

Type:

Reserved SIP Calls: ☒ None ☐ Minimum ☐ Maximum

Requested:

URI

☒ Single ☐ Fail Over ☐ Load Balance

VoiceXML URL:

Mutual Certificate Authentication: ☐ Yes ☒ No

Basic Authentication: ☐ Yes ☒ No

ASR Speech Servers ▶

TTS Speech Servers ▼

TTS:

Voices

Selected Voices

English(USA) en-US James M

English(USA) en-US Julie F

Application Launch ▼

☒ Inbound ☐ Inbound Default ☐ Outbound

☒ Number ☐ Number Range ☐ URI

Called Number:

Add

6. Configure ReadSpeaker speechServer MRCP

This section provides the procedure for configuring ReadSpeaker.

The configuration of ReadSpeaker is performed by the ReadSpeaker technical support team. The procedural steps are presented in these Application Notes for informational purposes.

Log in to the Linux shell of ReadSpeaker. Navigate to the **/usr/vwmrcpd/ini** directory and open the **vwmrcpsrv.ini** file with a text editor such as **vi**.

```
[xxxx@localhost ~]# cd /usr/vwmrcpd/ini
[xxxx@localhost ~]# vi vwmrcpsrv.ini
```

Make certain that **Port** and **MRCP2Port** values match to the TTS server base port and listener port values in **Section 5.3** respectively.

Also make certain that there is an **EngineAttr** entry for each TTS custom voice configured in **Section 5.2**, as shown below.

Note that **SaveVoice** and **SaveText** were set in the compliance testing for troubleshooting purposes.

```
IfaceName      eth0      ; network interface name( default:eth0 )
SaveDir /usr/vwmrcpd ; voice save base directory
VerifyPath     /usr/vwmrcpd/verify/ ; verification directory
Port          8000    ; SIP port number
MRCP2Port     8002    ; MRCPv2 port number
AdminPort      8001    ; MRCPv2 server admin port number
MaxLog 1000000000 ; bytes
LogDeleteDay   10     ; tts log files save days
SaveVoice     1      ; save converted voice data to file for debug
SaveText      1      ; save input text data to file for debug
SentencePause  0       ; set sentence pause value (default 0)
CommaPause     0       ; set comma pause value (default 0)
LineLength     65536   ; Max RTSP's one Line length(Min: 1024, Max: 65536)
MaxSessionIdle 600     ; Max Session Idle Time (sec. Min value: 10 sec, Max value: 3600 sec)
MaxSession     128     ; Max Session number
RTPBuffer      250     ; RTP Packet Buffer size(1 Packet is 20 ms)
RTPBasePort    30000   ; RTP Base port number
RTPPortRange   10000   ; RTP port number range
ResourceURIAddr 10.64.101.204 ; ResourceURL base addr
EngineAttr1   james,100,100,100 ; Name,Vol,Spd,Pit
EngineAttr2   julie,100,100,100 ; Name,Vol,Spd,Pit
```


7. Verification Steps

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

From the EPM web interface, select **Real-time Monitoring** → **System Monitor** from the left pane to display the **System Monitor** screen in the right pane.

Select the **ExperiencePortal Details** tab followed by the applicable **MPP** entry.

The screenshot shows the Avaya Experience Portal 8.0.0 (ExperiencePortal) interface. The left sidebar contains a navigation menu with categories: User Management, Real-time Monitoring, System Maintenance, System Management, and System Configuration. The main content area displays the 'System Monitor' page for July 28, 2021, at 9:52:34 AM EDT. Below the title, there is a description of the page's function. Two tabs are visible: 'Summary' and 'ExperiencePortal Details'. The 'ExperiencePortal Details' tab is active, showing a table of system components. The table includes columns for Server Name, Type, Mode, State, Config, Call Capacity (Current, Licensed, Maximum), Active Calls (In, Out), Calls Today, and Alarms. The table lists EPM and MPP servers, along with a Summary row. All servers are in an 'Online Running' state with 'OK' configuration. The MPP server shows 10 current calls, 10 licensed calls, and 10 maximum calls, with 0 active calls in or out and 0 calls today. The Summary row shows 10 current calls, 10 licensed calls, and 10 maximum calls, with 0 active calls in or out and 0 calls today. All rows show a red alarm icon.

Server Name	Type	Mode	State	Config	Call Capacity			Active Calls		Calls Today	Alarms
					Current	Licensed	Maximum	In	Out		
EPM	EPM	Online	Running	OK							
MPP	MPP	Online	Running	OK	10	10	10	0	0	0	
Summary					10	10	10			0	

The **MPP Details** screen is displayed. Select **Service Menu** toward the bottom of the screen to launch the Media Server Service Menu.

AVAYA Welcome
Last logged in yesterday at 2:50:16 PM EDT

Avaya Experience Portal 8.0.0 (ExperiencePortal) Home Help Logoff

Expand All Collapse All

You are here: [Home](#) > [Real-Time Monitoring](#) > [System Monitor](#) > MPP Details

MPP Details (Jul 28, 2021 9:57:31 AM EDT)

[Refresh](#)

This page displays the detailed status of the selected MPP server.

General Information

Server Name: MPP

Unique Id: 10001

Host Address: 10.64.101.216

IP Address: 10.64.101.216

Version: 8.0.0.0.1451

Last Successful Poll: Jul 28, 2021 9:57:14 AM EDT

Configuration [History](#)

Current State: OK

Last Modified: Jul 28, 2021 8:51:14 AM EDT

Operational State

Current State: Running (Since Jul 27, 2021 2:16:01 PM EDT)

Operational Mode

Current Mode: Online (Since May 24, 2021 3:01:18 PM EDT)

Call Status

Current Capacity: 10

Licenses Allocated: 10

Maximum Call Capacity: 10

Active Calls: 0

Calls Today: 0

Resource Status

CPU: 1%

Memory: 3%

Disk: 9%

Miscellaneous

[Service Menu](#)

The **Avaya Experience Portal MPP** screen is launched and displayed. Select **Resources** → **Speech Servers** from the left pane to display the **Speech Servers** screen in the right pane.

Verify that there is an entry for ReadSpeaker with **Status** of “**Server is UP**”, as shown below.

AVAYA Welcome

Avaya Experience Portal MPP 8.0.0.0.1451 on ep-mpp.dr220.com Logoff

Home

You are here: [Home](#) > [Resources](#) > Speech Servers

Speech Servers

Name	Type	Status	Values	Ports	Errors	Latency
ReadSpeaker	TTS	Server is UP	H (Simultaneous): 10 M (Total): 10	Active: 0 Reserve: 0	Timeout: 0 Setup: 0 Application: 0	Average: 0 Maximum: 0 Minimum: 0

Wed Jul 28 10:02:16 2021

8. Conclusion

These Application Notes describe the configuration steps required for ReadSpeaker speechServer MRCP 2.16 to interoperate with Avaya Experience Portal 8.0. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

9. Additional References

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

1. *Administering Avaya Aura® Communication Manager*, Release 8.1.x, Issue 8, November 2020, available at <http://support.avaya.com>.
2. *Administering Avaya Experience Portal*, Release 8.0, Issue 1.1, October 2020, available at <http://support.avaya.com>.
3. *ReadSpeaker speechServer MRCP User's Guide*, Software Version 2.16, November 2020, available at http://docs.readspeaker.com/assets/speechserver/ps/PS-ReadSpeaker_speechServer-EN-MRCP_userguide-v2.16.pdf.

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