Avaya Solution & Interoperability Test Lab

Application Notes for Beijing InfoQuick SinoVoice Speech Technology jTTS 5.0.1 with Avaya Voice Portal 5.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Beijing InfoQuick SinoVoice Speech Technology (SinoVoice) jTTS 5.0.1 with Avaya Voice Portal 5.1. SinoVoice jTTS uses the Media Resource Control Protocol (MRCP) version 2 for its Text-To-Speech (TTS) features to interface with VoiceXML applications running on the Avaya Voice Portal.

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

These Application Notes describe the configuration steps required to integrate Beijing InfoQuick SinoVoice Speech Technology (SinoVoice) jTTS 5.0.1 with Avaya Voice Portal 5.1. Beijing InfoQuick SinoVoice jTTS uses the Media Resource Control Protocol (MRCP) version 2 for its Text-To-Speech (TTS) features to interface with the VoiceXML (VXML) applications running on Avaya Voice Portal.

Beijing InfoQuick SinoVoice jTTS is the core text-to-speech technology of SinoVoice which uses large scale recorded voice library and algorithm based on hierarchical prosody structure matching.

2. General Test Approach and Test Results

The general test approach is to place calls manually to Avaya Voice Portal running VXML applications that uses the TTS resources of SinoVoice jTTS.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to Avaya Voice Portal that ran VoiceXML applications that use the TTS engines on the SinoVoice jTTS solution. The compliance test focused on placing calls to verify accurate TTS synthesis.

The serviceability testing focused on verifying the ability of the SinoVoice jTTS solution to recover from adverse conditions, such as rebooting of SinoVoice jTTS and Avaya Voice Portal and disconnecting the LAN cables to the SinoVoice jTTS server.

2.2. Test Results

All test cases passed. Avaya Voice Portal was successful in running applications that use the TTS resources of the SinoVoice jTTS solution.

2.3. Support

For technical support on SinoVoice jTTS, contact the SinoVoice support team at:

- Phone: +86-10-82826886
- Email: tts@sinovoice.com.cn

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3. Reference Configuration

Figure 1 illustrates the test configuration used to verify the SinoVoice jTTS solution. SinoVoice jTTS was installed on a Microsoft Windows 2003 Server with Service Pack 2. VoiceXML applications were installed on the Apache Tomcat running on Avaya Voice Portal. Avaya Voice Portal is connected to Avaya Aura® Session Manager and Avaya Aura® Communication Manager using SIP VoIP Connections. Avaya IP telephones were used to place calls to Avaya Voice Portal, which would run the VoiceXML applications. The applications would use the SinoVoice jTTS Server for speech synthesis.

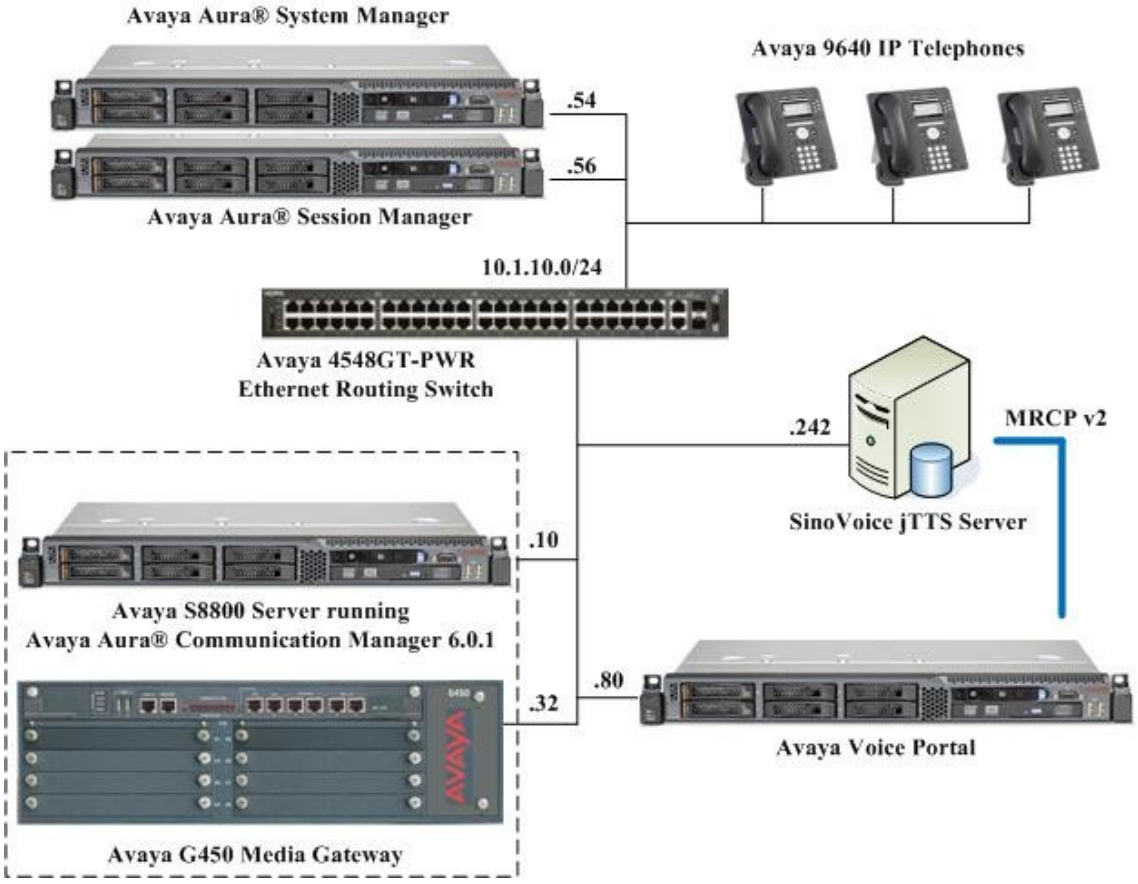

Figure 1: Test Configuration of SinoVoice jTTS with Avaya Voice Portal

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4. Equipment and Software Validated

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

Equipment	Software
Avaya S8800 Server	Avaya Voice Portal 5.1 Service Pack 1 (5.1.0.1.1602)
Avaya S8800 Server	Avaya Aura® Communication Manager 6.0.1 (Service Pack 4 00.1.510.1-19100)
Avaya G450 Media Gateway	31.20.0
Avaya S8800 Server	Avaya Aura® System Manager 6.1 Service Pack 5
Avaya S8800 Server	Avaya Aura® Session Manager 6.1 Service Pack 5
Avaya 9640 IP Telephones	3.1 SP2 (H.323)
Avaya 4548GT-PWR Ethernet Routing Switch	V5.4.0.008
Microsoft Windows Server 2003 Standard Edition	Service Pack 2
SinoVoice jTTS	5.0.1

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5. Configure Avaya Aura® Communication Manager

The configuration of the SIP Trunks between Communication Manager and Session Manager, and the routing of calls to Avaya Voice 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 SinoVoice jTTS. 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 Avaya Voice Portal, typically the IP network region assigned to the Session Manager SIP Trunk signaling group. Set **Audio Code** to an appropriate value supported by Avaya Voice Portal and SinoVoice jTTS. In this configuration, the **G.711MU** codec was used and **Media Encryption** was set to **none**.

```
change ip-codec-set 6                                          Page   1 of   2

                           IP Codec Set

   Codec Set: 6

   Audio          Silence      Frames   Packet
   Codec          Suppression  Per Pkt  Size(ms)
 1: G.711MU            n          2        20
 2:
 3:
 4:
 5:
 6:
 7:


    Media Encryption
 1: none
 2:
 3:
```


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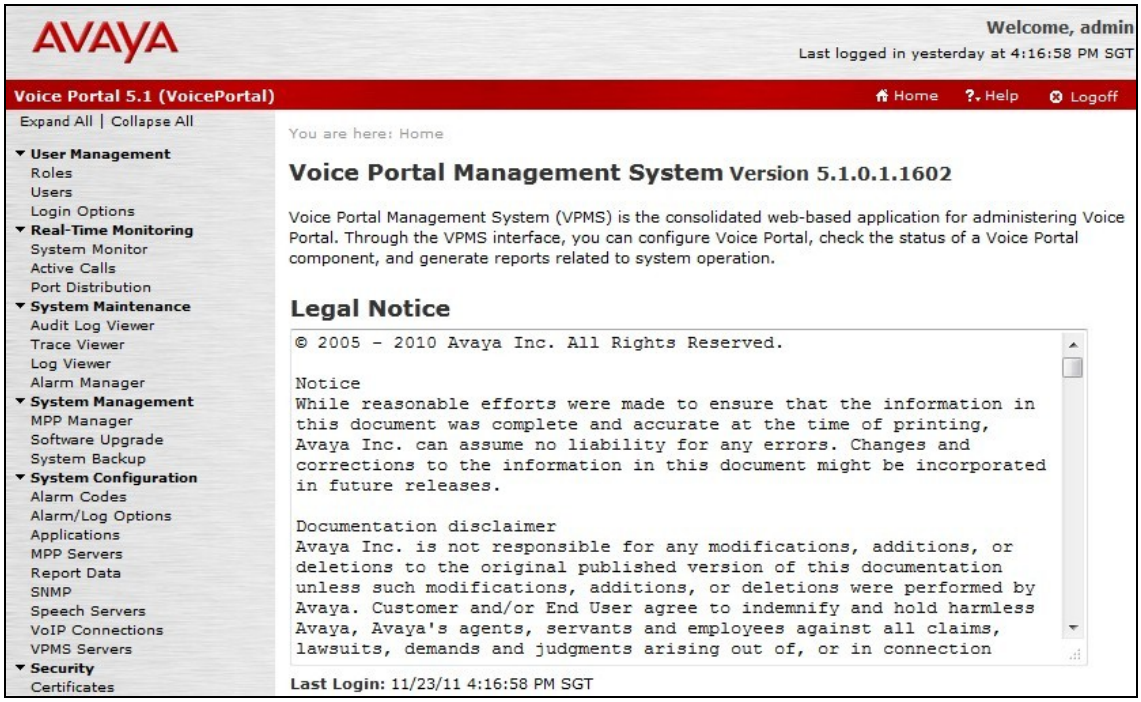
6. Configure Avaya Voice Portal

The initial administration of Avaya Voice 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 Avaya Voice Portal that is required for the purpose of administering SinoVoice jTTS. The following steps will be covered:

- Configuring the VoIP audio format
- Adding SinoVoice jTTS as a TTS server
- Adding applications

Step	Description
1.	Avaya Voice Portal is configured via the Voice Portal Management System (VPMS) web interface. To access the web interface, enter **https://<ip-addr>** as the URL in an internet browser, where **<ip-addr>** is the IP address of the VPMS. Log in using an account with the Administration role to display the main page. 

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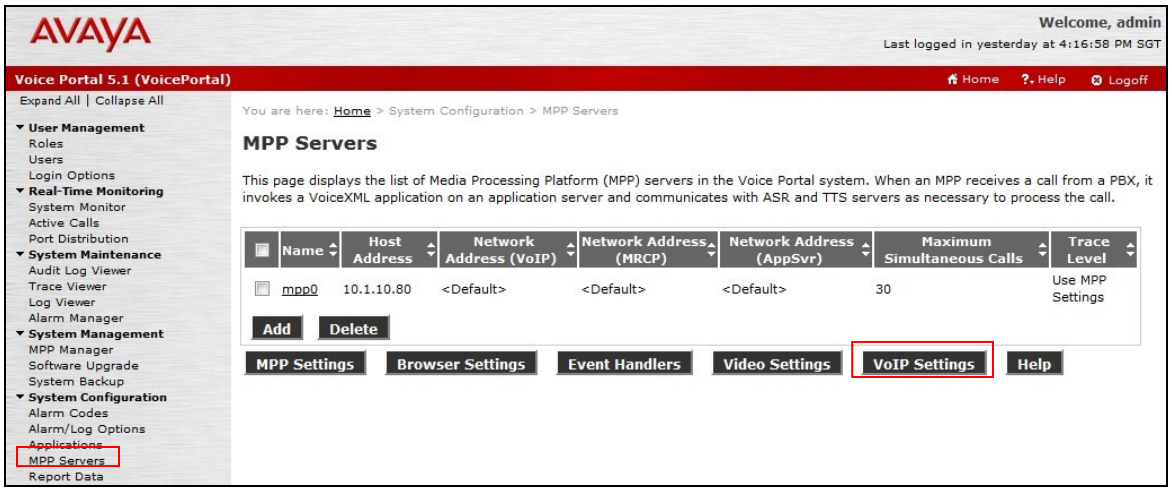
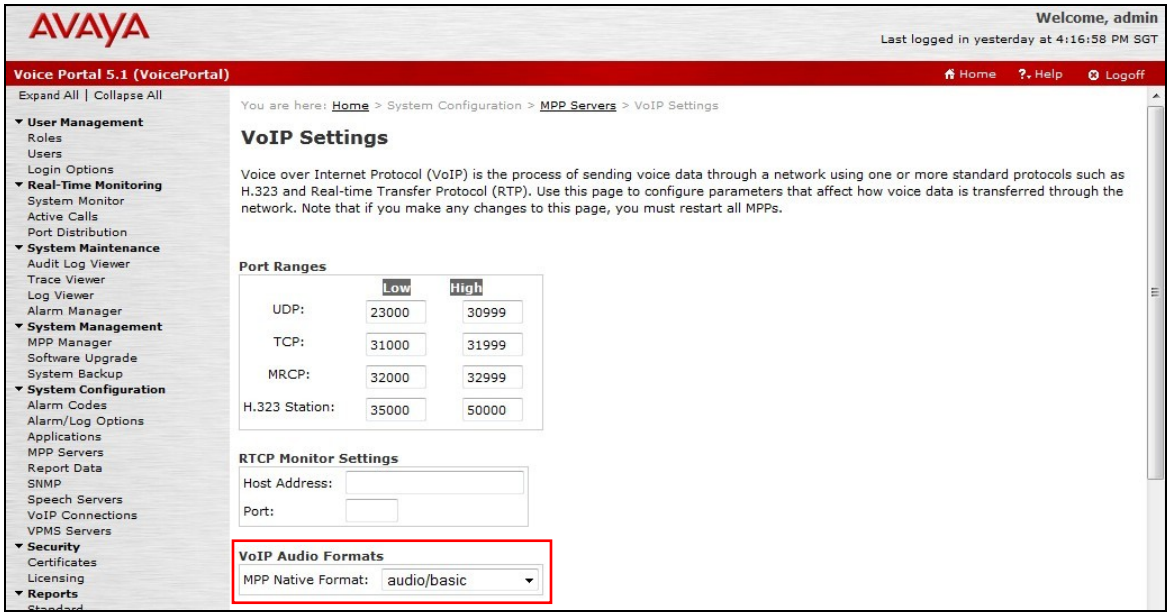
Step	Description
2.	To configure the codec used by the Media Processing Platform (MPP) server, click **System Configuration → MPP Servers** in the left pane and click **VoIP Settings**. 
3.	Set **MPP Native Format** to **audio/basic** to configure the MPP server for G.711 mu-law to match the configuration on Communication Manager in **Section 5**. Scroll down the page and click **Save** (not shown). 

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Step	Description
4.	SinoVoice jTTS is not natively included in the set of TTS engines supported by Avaya Voice Portal and will not initially appear in the TTS configuration screen. To add SinoVoice jTTS to the list of supported engines, log into the VPMS server, either locally or remotely through Secure Shell (SSH), and locate the **languages.properties** file found in **/opt/Tomcat/apache-tomcat-6.0.18b/webapps/VoicePortal/WEB-INF/classes/messages**. Edit the file and add the lines shown below to the appropriate section.

```
< Some lines removed for brevity >

#>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
#{{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.

SinoVoiceMRCPLabels=MRCP V1,MRCP V2
SinoVoiceTransportLabels=TCP

#}}END:PROPERTIES:VOICEPORTAL_5.1:ADDITIONS

< remaining lines removed for brevity >
```


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Step	Description
5.	Locate the **languages.properties** file found in **/opt/Tomcat/apache-tomcat-6.0.18b/webapps/VoicePortal/WEB-INF/classes/config/**. Edit the file and add the fields and lines shown below to the appropriate section.

```
#
# Engine Type options displayed on the page
#
asrEngines=IBM WVS,Loquendo,Nuance
ttsEngines=IBM WVS,Loquendo,Nuance,SinoVoice

# Engine Type conversion from display to internal data in the databas
< Some lines removed for brevity >

SinoVoiceTTS=sinovoice

# Engine Type conversion from internal data in the database to display
ibmwvs=IBM WVS
< Some lines removed for brevity >

sinovoice=SinoVoice

< Some lines removed for brevity >

# TTS LANGUAGE

< Some lines removed for brevity >

SinoVoiceTTSlanguages=zh-cn XiaoKun F,zh-cn Liang M,en-us Julie F,en-us Paul M

#
# Language Default
#
< Some lines removed for brevity >

SinoVoiceTTSlanguagesDefault=zh-cn XiaoKun F
#
# default base port
#
< Some lines removed for brevity >

SinoVoiceBasePort=5060
#
# default New Connection per Session
#
< Some lines removed for brevity >

SinoVoicePerPort=Yes
#
# default URL
#
< Some lines removed for brevity >

SinoVoiceRtspUrlTts=/media/sinovoicesynthesizer
```


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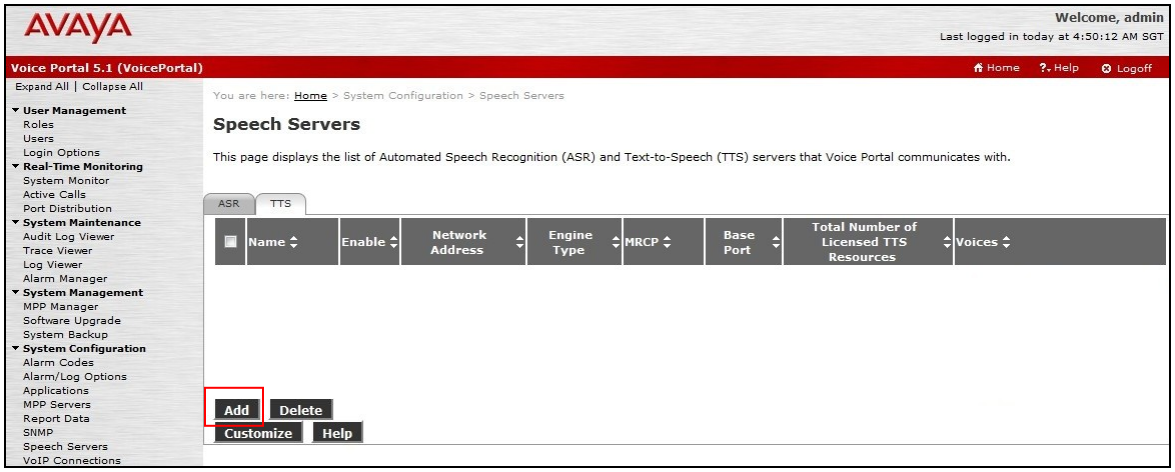
Step	Description
	< Some lines removed for brevity > # # MRCP Protocol # < Some lines removed for brevity > **SinoVoiceMRCPValues=mrcpv1,mrcpv2** # # Transport # < Some lines removed for brevity > **SinoVoiceTransportValues=tcp** < remaining lines removed for brevity >
6.	Reboot the VPMS server for the above changes to take effect.
7.	To configure the SinoVoice jTTS server, click **System Configuration → Speech Servers**. Click the **TTS** tab and click **Add**. 

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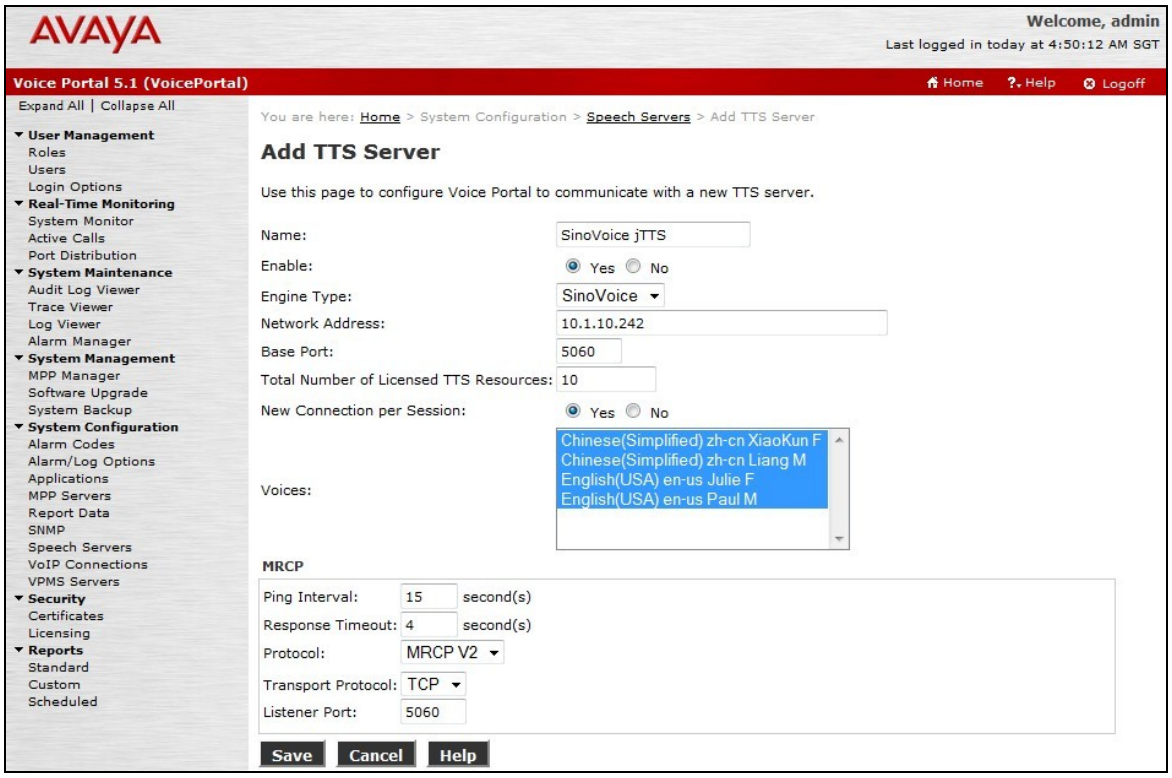
Step	Description
8.	In the **Add TTS Server** page, select **SinoVoice** as the **Engine Type**. This engine type option was added by modifying the `languages.properties` files in **Steps 4** and **5**. In the **MRCP** section, set **Protocol** to **MRCP V2**. Specify the **Name**, select **Yes** for **Enable**, set **Network Address** to the IP address of the SinoVoice jTTS Server and select the desired **Voices** used by the applications. The **Total Number of Licensed TTS Resources** should also be set to the number of licenses available on the SinoVoice jTTS Server. All other fields were left at their default values. Click **Save**.



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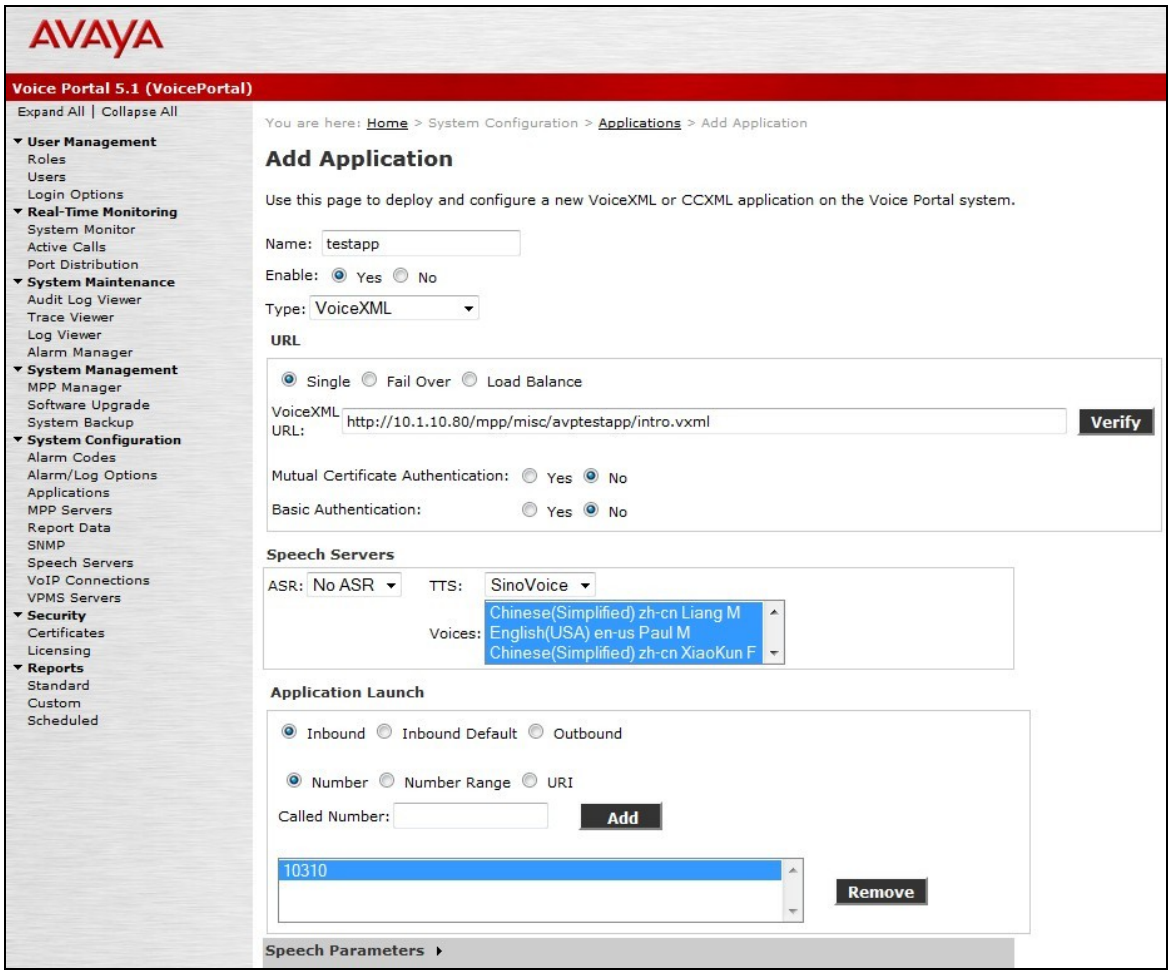
Step	Description
9.	To assign SinoVoice jTTS to an Avaya Voice Portal application, click **System Configuration → Applications** and then click **Add** on the Applications page (not shown). Configure the Add Application page as shown below. This configuration assigns the default Avaya Voice Portal test application deployed on the MPP Server to the called number **10310**. Specify the **Name**, select **Yes** for **Enable**, set **MIME Type** to **VoiceXML** and set **VoiceXML URL** to **http://<IP address of MPP server>/mpp/misc/avptestapp/intro.vxml**. Select **SinoVoice** for **TTS** and then select the appropriate **Voices** to use. Click **Save** (not shown). Repeat this procedure to assign SinoVoice jTTS to other Voice Portal applications. 

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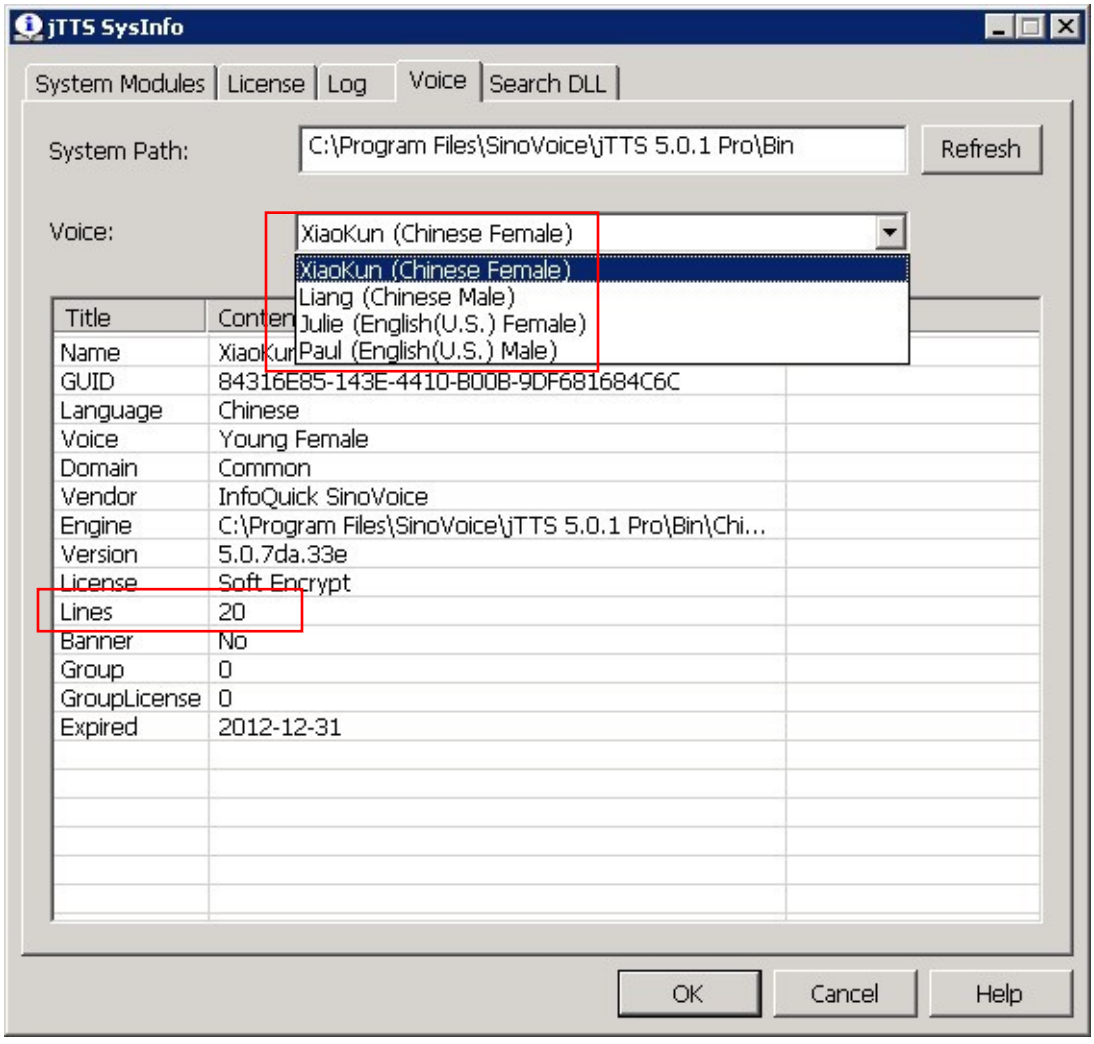
7. Configure SinoVoice jTTS

The following components are required to run the SinoVoice jTTS MRCP Server. In this test configuration, both the jTTS Platform Engine and jMRCP Server are installed on the same server.

- jTTS Platform Engine
- jTTS Voice Library
- jMRCP Server

Step	Description
1.	On the SinoVoice jTTS server, click **Start → All Programs → jTTS 5.0.1 Professional → jTTS System Information**. On the jTTS SysInfo window, click the **Voice** tab. Verify that the desired voices are installed. Verify also that the value for **Lines** shows sufficient number of license required. Click **OK** to close the window. 

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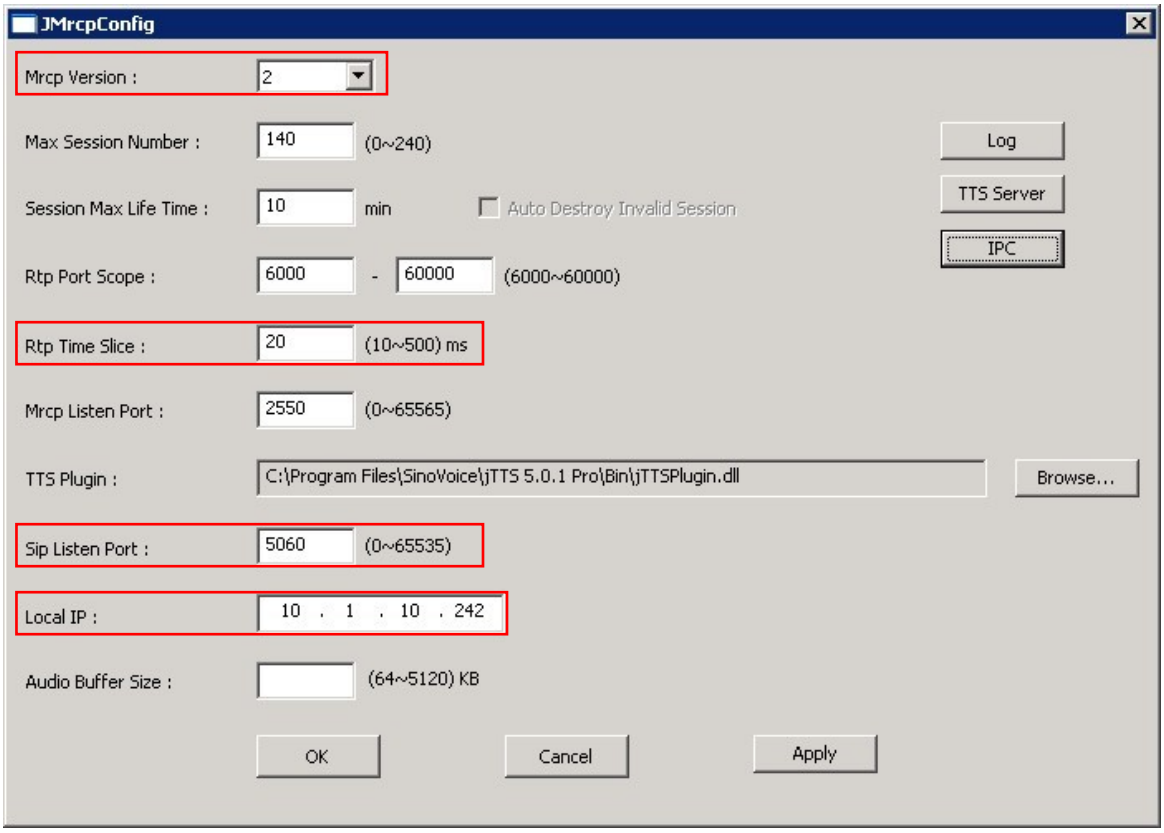
Step	Description
2.	Click **Start → All Programs → jTTS 5.0.1 Professional → Mrcp Config Tool**. On the jMrcpConfig window, configure as shown below. • **Mrcp Version**: Select **2**. • **Rtp Time Slice**: Enter **20**. • **Sip Listen Port**: Enter **5060**, which is the default port value for SIP. • **Local IP**: Enter the SinoVoice jTTS Server IP address as shown in **Figure 1**. Click **Apply**, and then **OK** to complete the configuration. 

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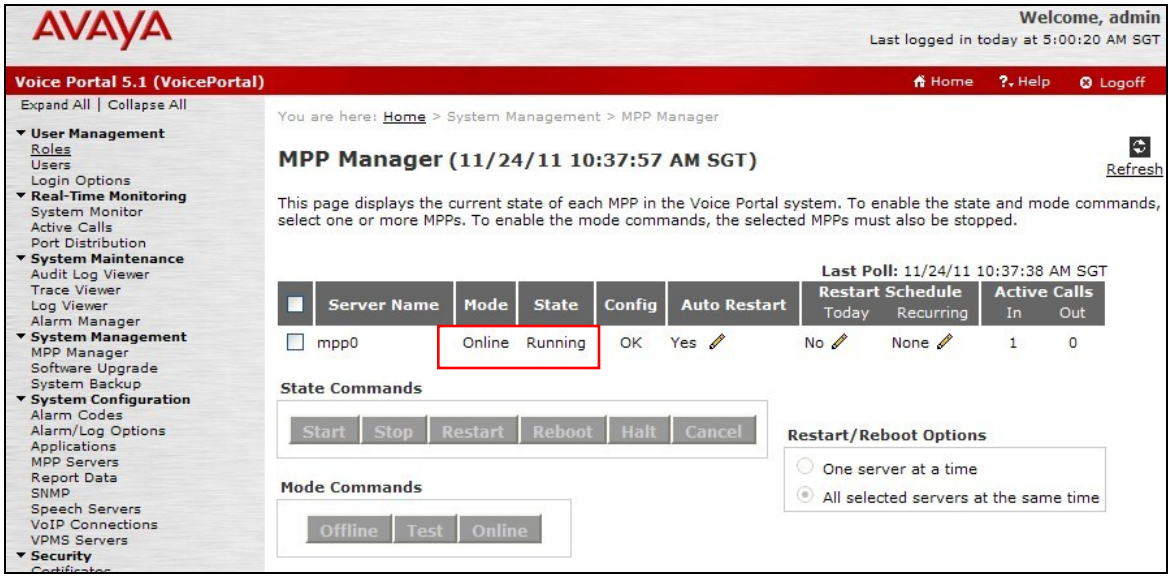
8. Verification Steps

This section provides the verification steps that may be performed to verify that Avaya Voice Portal can run VoiceXML applications that use the SinoVoice jTTS for TTS speech synthesis.

8.1. Verify Avaya Voice Portal

Step	Description
1.	From the VPMS web interface, click **MPP Manager** on the left pane. On the MPP Manager page, verify that the MPP server is **Online** and **Running**. 

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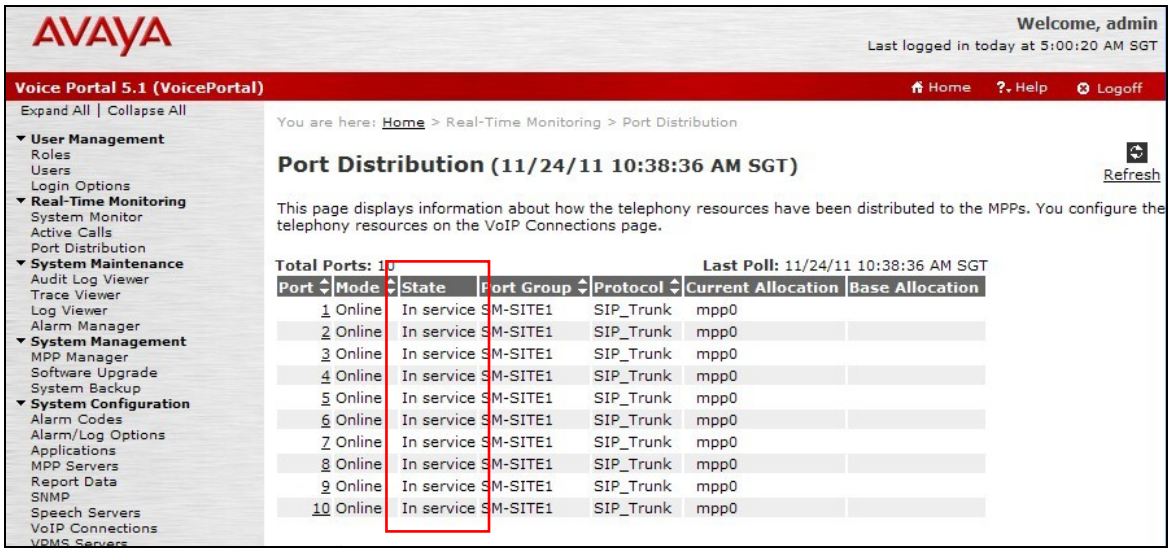
Step	Description
2.	From the VPMS web interface, click **Port Distribution** on the left pane. On the **Port Distribution** page, verify that the **State** of the ports on the MPP server is **In service**. 
3.	Place a call to Avaya Voice Portal that runs a VoiceXML script which uses the SinoVoice jTTS for speech synthesis. Verify that the application answers the call and that the application is able to announce the TTS synthesized prompts to the caller. From the VPMS web interface, click **Active Calls** on the left pane and verify that the TTS Server in use is SinoVoice jTTS.

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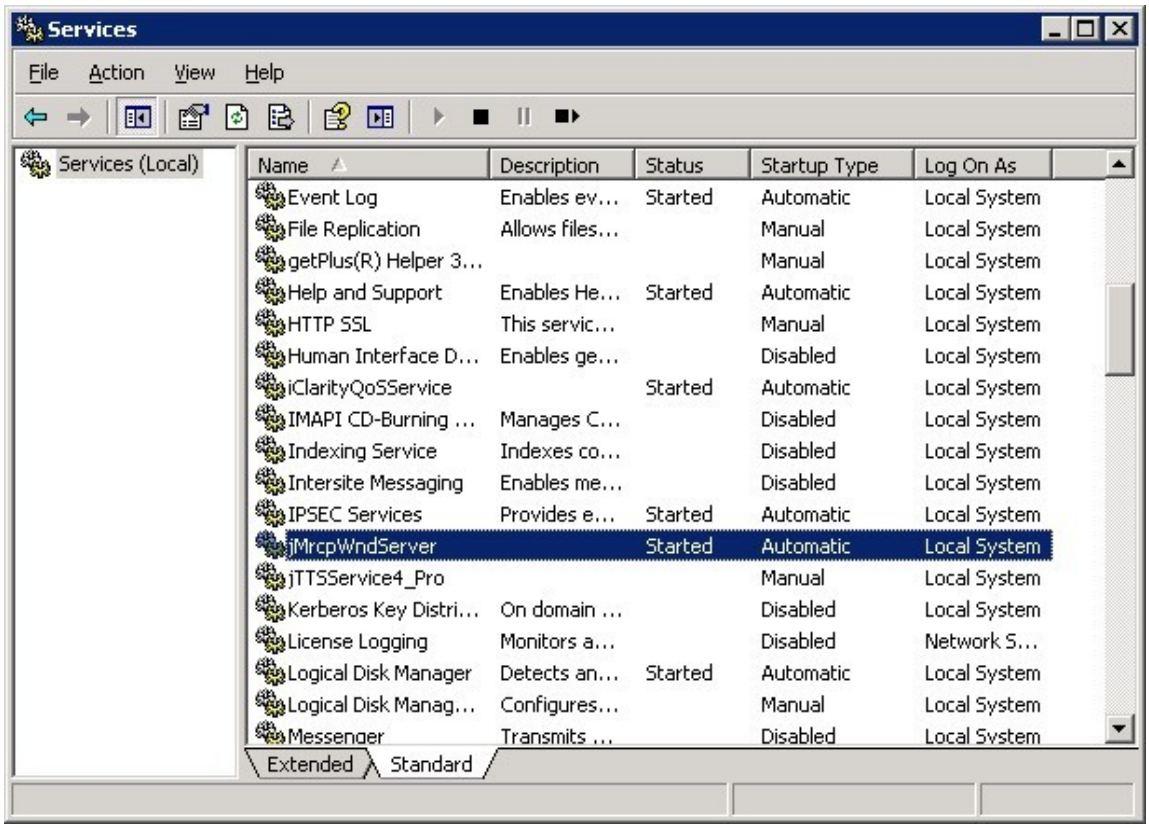
8.2. Verify SinoVoice jTTS

On the SinoVoice jTTS server, click **Start→ Administrative Tools → Services**. In the Services window, verify that the **jMrcpWndServer** is started.



9. Conclusion

These Application Notes describe the compliance-tested configuration used to validate Avaya Voice Portal 5.1 with Beijing InfoQuick SinoVoice jTTS 5.0.1. All test cases were completed successfully.

10. Additional References

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

[1] *Administering Voice Portal*, Release 5.1, June 2010.

Product information on Beijing InfoQuick SinoVoice jTTS 5.0.1 can be found at http://www.sinovoice.com/english/jtts.html.

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