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Avaya Solution & Interoperability Test Lab

Application Notes for eWings Technologies Communication Assistant with Avaya Communication Manager using Avaya SIP Enablement Services - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring eWings Technologies Communication Assistant (ComAssistant) to successfully interoperate with Avaya Communication Manager through Avaya SIP Enablement Services (SES).

eWings ComAssistant is a value-added total solution providing multiple speech-based services in one box. It enhances business efficiency and productivity by self-service and automation.

In the configuration described in these Application Notes, ComAssistant uses the Session Initiation Protocol (SIP) to communicate with Communication Manager through the SES server. ComAssistant registers multiple SIP Softphone stations with the SES server where they function in the same way as the Avaya SIP Telephones. These SIP Softphone stations are administered as Off-PBX Stations (OPS) in Communication Manager. ComAssistant services are accessed by calling the hunt groups provisioned with these stations as members. During compliance testing, ComAssistant services – Auto Attendant, Auto Dialer, Personal Dialer and Voice Mail – are verified to be working.

Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

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1. Introduction

These Application Notes describe a compliance-tested configuration comprising of Avaya Communication Manager, Avaya SIP Enablement Services and eWings Technologies ComAssistant.

ComAssistant 1.3.0 is a Windows 2000-based voice application providing enterprise-wide comprehensive voice applications. It uses speech-recognition technology to provide Auto Dialer, Personal Dialer, Auto Attendant, Voice Mail, Fax Server and Information Alert services.

For the Auto Attendant service, Avaya Communication Manager is configured to route incoming calls to a hunt group which consists of the SIP OPS stations configured for the ComAssistant. When ComAssistant receives a call, it determines the destination through speech-recognition or DTMF digits entered. ComAssistant then transfers the call to the destination extension by performing a call transfer. If the calling or called parties use the Avaya 4600 Series IP Telephones that support data push, the calling and called party information will be pushed to the respective IP Telephones. More hunt groups are configured in the same way for the other ComAssistant services such as Auto Dialer, Personal Dialer and Voice Mail.

The Interoperability Compliance Testing included SIP interworking and feature functionality testing only. For Voice Mail service, the ComAssistant was tested for dial-in voice recording/playback only (no voicemail call coverage testing or message waiting lamp update).
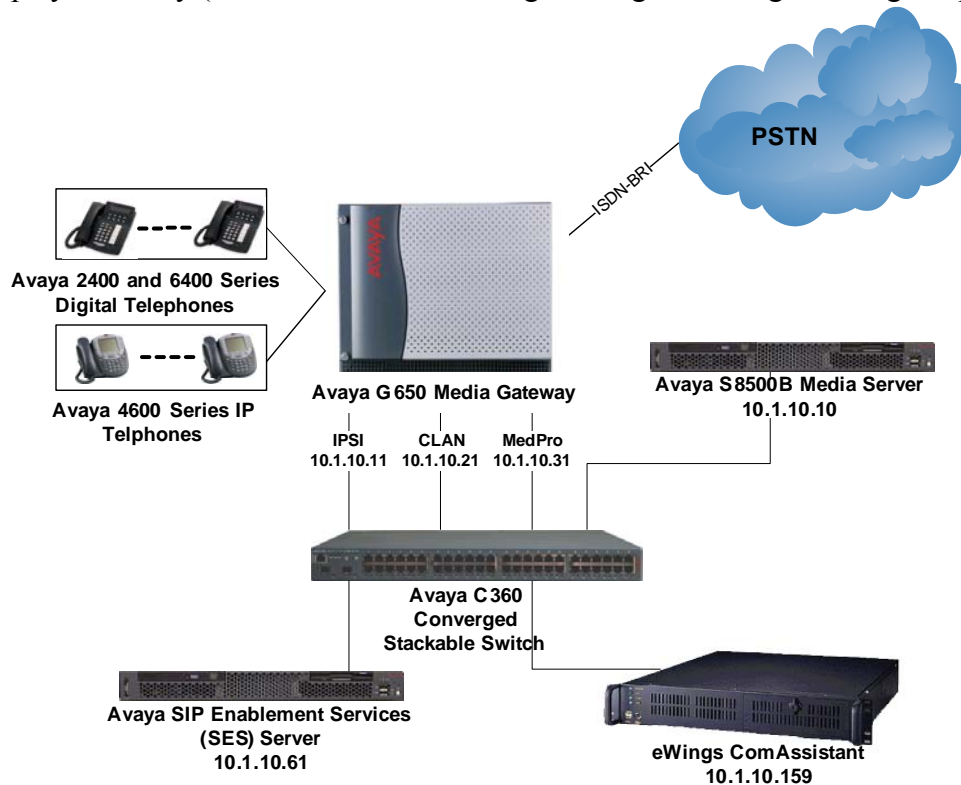

Figure 1: eWings ComAssistant Compliance Test Sample Configuration

2. Equipment and Software Validated

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

Equipment	Software
Avaya S8500B Media Server	3.0 (R013x.00.0.340.3)
Avaya G650 Media Gateway • TN2312BP IP Server Interface • TN799DP C-LAN Interface • TN2302AP IP Media Processor	- HW07, FW021 HW01, FW015 HW20, FW105
Avaya 4600 Series IP Telephones	2.2.3 (4610SW) 2.2.3 (4620SW) 2.2.3 (4621SW) 2.5 (4625SW)
Avaya 6400 Series Digital Telephones	-
Avaya 2400 Series Digital Telephones	-
Avaya SIP Enablement Services	CCS-3.0.0.0-031.0
Avaya C364T-PWR Converged Stackable Switch	4.3.12
eWings ComAssistant Server	1.3.0

3. Configure Avaya Communication Manager

This section describes the steps for configuring the voice lines, hunt groups, IP codecs and SNMP parameters on Avaya Communication Manager. The steps are performed through the System Access Terminal (SAT) interface and via the Media Server Web Interface. IP Telephones settings file (46xxsettings.txt) is also modified to allow the ComAssistant server to push data to the IP Telephones. For other standard administration functions, they are covered in References [1] and [2].

3.1. Voice Lines

The voice lines in this configuration are SIP Softphone stations which are administered as OPS stations in Communication Manager. Further administration is required on the SES server and will be covered in Section 4.

Step	Description
1.	Enter the **add station s** command, where **s** is an extension valid under the provisioned dial plan. On Page 1 of the **station** form, set **Type** to a digital or IP telephone set type (e.g. 6408D+), enter a descriptive **Name**, specify the **Security Code**, and set **IP Softphone** to "**y.**" Enter the **duplicate station s** command, where **s** is the extension used above, to create the rest of the stations. **Note:** ComAssistant requires a block of consecutive extension numbers for the SIP telephone extensions that it uses.

```
add station 13001                                        Page   1 of   4
                              STATION

 Extension: 13001                  Lock Messages? n          BCC: 0
      Type: 6408D+                  Security Code:             TN: 1
      Port: X                     Coverage Path 1:           COR: 1
      Name: SIP 13001             Coverage Path 2:           COS: 1
                                  Hunt-to Station:


 STATION OPTIONS
                Loss Group: 2      Personalized Ringing Pattern: 1
              Data Module? n                    Message Lamp Ext: 13001
             Speakerphone: 2-way          Mute Button Enabled? y
         Display Language: english


                                             Media Complex Ext:
                                                  IP SoftPhone? n
```

3.2. Hunt Groups

The following steps describe the configuration of hunt groups in Avaya Communication Manager. Seven hunt groups are created, with each hunt group corresponding to a ComAssistant service. The voice lines created in section 3.1 are assigned as members in all the hunt groups so that the lines are shared among all ComAssistant services.

Step	Description
1.	Enter the **add hunt-group n** command, where **n** is an unused hunt group number. On page 1 of the **hunt group** form, assign a **Group Name** and **Group Extension** valid under the provisioned dial plan.

```
add hunt-group 11                                          Page   1 of  60
                              HUNT GROUP


            Group Number: 11                                 ACD? n
              Group Name: eWings SIP AA                     Queue? y
         Group Extension: 13100                            Vector? n
             Group Type: ucd-mia                     Coverage Path:
                      TN: 1            Night Service Destination:
                     COR: 1                       MM Early Answer? n
            Security Code:                  Local Agent Preference? n
   ISDN/SIP Caller Display:


              Queue Limit: unlimited
 Calls Warning Threshold:         Port:
  Time Warning Threshold:         Port:
```

On Page 3, assign the extensions created in Section 3.1 Step 1. Create the rest of the Hunt Groups and assign them with the same extensions.

```
add hunt-group 11                                          Page   3 of  60
                              HUNT GROUP
     Group Number: 11        Group Extension: 13100     Group Type: ucd-mia
   Member Range Allowed: 1 - 1500 Administered Members (min/max): 1   /4
                                       Total Administered Members: 4
GROUP MEMBER ASSIGNMENTS
       Ext        Name (24 characters)    Ext        Name (24 characters)
   1: 13001     SIP 13001           14:
   2: 13002     SIP 13002           15:
   3: 13003     SIP 13003           16:
   4: 13004     SIP 13004           17:
   5:                               18:
   6:                               19:
   7:                               20:
   8:                               21:
   9:                               22:
  10:                               23:
  11:                               24:
  12:                               25:
  13:                               26:


   At End of Member List
```

3.3. Off-PBX Station Mapping

Step	Description
1.	Enter the **change off-pbx-telephone configuration-set n** command, where **n** is an unused configuration set. Enter a descriptive name for **Configuration Set Description**, Set **Calling Number Style** to "**pbx**".
	<pre>change off-pbx-telephone configuration-set 5 Page 1 of 1

                            CONFIGURATION SET: 5

       Configuration Set Description: SIP Phones
                 Calling Number Style: pbx
                  CDR for Origination: none
   CDR for Calls to EC500 Destination? y
        Fast Connect on Origination? n
         Post Connect Dialing Options: dtmf
         Cellular Voice Mail Detection: none
                       Barge-in Tone? n
             Identity When Bridging: principal</pre> |
| 2. | Enter the **add off-pbx-telephone station-mapping** command. On page 1 of the form, enter the extensions created in Section 3.1 Step 1 for **Station Extension** and **Phone Number**, set **Application** to "**OPS**" and **Configuration Set** to the number created in Step 1. Set **Trunk Selection** to the Trunk Group number connecting to the SES server. |
| | <pre>add off-pbx-telephone station-mapping   Page   1 of   2
                 STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

 Station   Application   Dial   Phone Number Trunk   Configuration
 Extension   Prefix   Selection   Set
 13001   OPS   - 13001   5   5
 13002   OPS   - 13002   5   5
 13003   OPS   - 13003   5   5
 13004   OPS   - 13004   5   5
 13005   OPS   - 13005   5   5</pre> |

3.4. Codec Configuration

Enter the **change ip-codec-set t** command, where **t** is the ip-codec-set used for communication to the SES server and eWings ComAssistant Server. In the first row, enter "**G.729**" for **Audio Codec** and "2" for **Frames Per Pkt**. The codec configured on the eWings ComAssistant Server in Section 4 Steps 11 and 12 must match this value.

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

                              IP Codec Set

      Codec Set: 1

      Audio        Silence       Frames    Packet
      Codec        Suppression   Per Pkt   Size(ms)
   1: G.729            n            2         20
   2:
   3:
   4:
   5:
   6:
   7:
```

Enter the **change ip-network-region u** command, where **u** is a number between 1 and 250, inclusive. Set **Codec Set** to the ip-codec-set number configured above. Set **Authoritative Domain** to the SIP domain assigned for the Avaya SES Server in Section 4 Step 3. In the compliance-tested configuration, all devices were in network region 1, including the SIP trunks connecting to the SES server and the SIP Softphone stations managed by eWings ComAssistant server.

```
change ip-network-region 1                                    Page   1 of  19
                          IP NETWORK REGION
  Region: 1
Location:                      Authoritative Domain: devlab.com
    Name: Site A - Main
                                Intra-region IP-IP Direct Audio: no
AUDIO PARAMETERS                Inter-region IP-IP Direct Audio: no
   Codec Set: 1                            IP Audio Hairpinning? y
UDP Port Min: 2048
UDP Port Max: 3028                        RTCP Reporting Enabled? y
DIFFSERV/TOS PARAMETERS         RTCP MONITOR SERVER PARAMETERS
 Call Control PHB Value: 46       Use Default Server Parameters? y
        Audio PHB Value: 46
        Video PHB Value: 26
802.1P/Q PARAMETERS
 Call Control 802.1p Priority: 6
      Audio 802.1p Priority: 6     AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                              RSVP Enabled? n
  H.323 Link Bounce Recovery? y
 Idle Traffic Interval (sec): 20
   Keep-Alive Interval (sec): 5
           Keep-Alive Count: 5
```
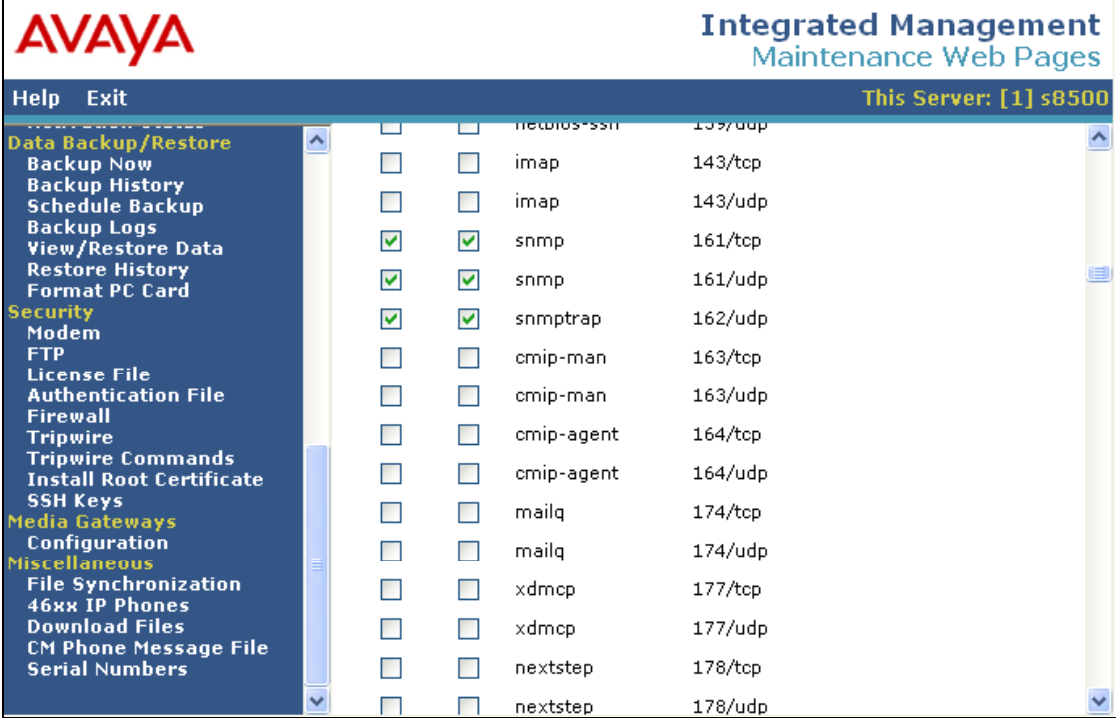
3.5. SNMP Configuration

Step	Description
1.	Enter the **change permissions acpsnmp** command. Set both **Display Admin. and Maint. Data** and **System Measurements** to "**y**".

```
change permissions acpsnmp                              Page   1 of   1
                        COMMAND PERMISSION CATEGORIES

                          Login Name: acpsnmp
COMMON COMMANDS

                Display Admin. and Maint. Data? y
                         System Measurements? y
                System Mgmt Data Transfer Only? n


ADMINISTRATION COMMANDS

          Administer Stations? n                    Administer Features? n
            Administer Trunks? n                 Administer Permissions? n


      Additional Restrictions? n

MAINTENANCE COMMANDS
            Maintain Stations? n         Maintain Switch Circuit Packs? n
              Maintain Trunks? n        Maintain Process Circuit Packs? n
              Maintain System? n                  Maintain Enhanced DS1? n
```

Step	Description
2.	Configure ComAssistant to receive SNMP traps from Communication Manager using SNMP version 1. Using Internet Explorer, log in to the Media Server Web Interface and browse to the Maintenance Web Interface pages. Under **Alarms**, click on **SNMP Traps** and click **Add**. Check the box **Check to enable this destination**. Enter the IP address of the ComAssistant Server for **IP address**. Select **SNMP version 1** and assign a name for **Community name**. Community name must match configuration at Section 5 Step 20.

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Step	Description
3.	Under **Alarms**, click on **SNMP Agents**. Under **IP Addresses for SNMP Access**, select **Following IP addresses** and enter the IP address of the ComAssistant Server. Select **SNMP version 1** and assign a name for **Community name**. Check on **Enable SNMP Version 1** and assign a string for **Community Name (read-only)**.

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Step	Description
4.	Scroll to the bottom of the **SNMP Agents** screen. Check **Enable Agent** and assign a new password for **Agent ACP Login**. Click on **Submit** to complete the settings.

Step	Description
5.	Configure the Firewall to allow SNMP. Under **Security**, click on **Firewall**. Click on **Advanced Setting**. Check the boxes next to the lines **snmp 161/tcp**, **snmp 161/udp**, **snmptrap**.

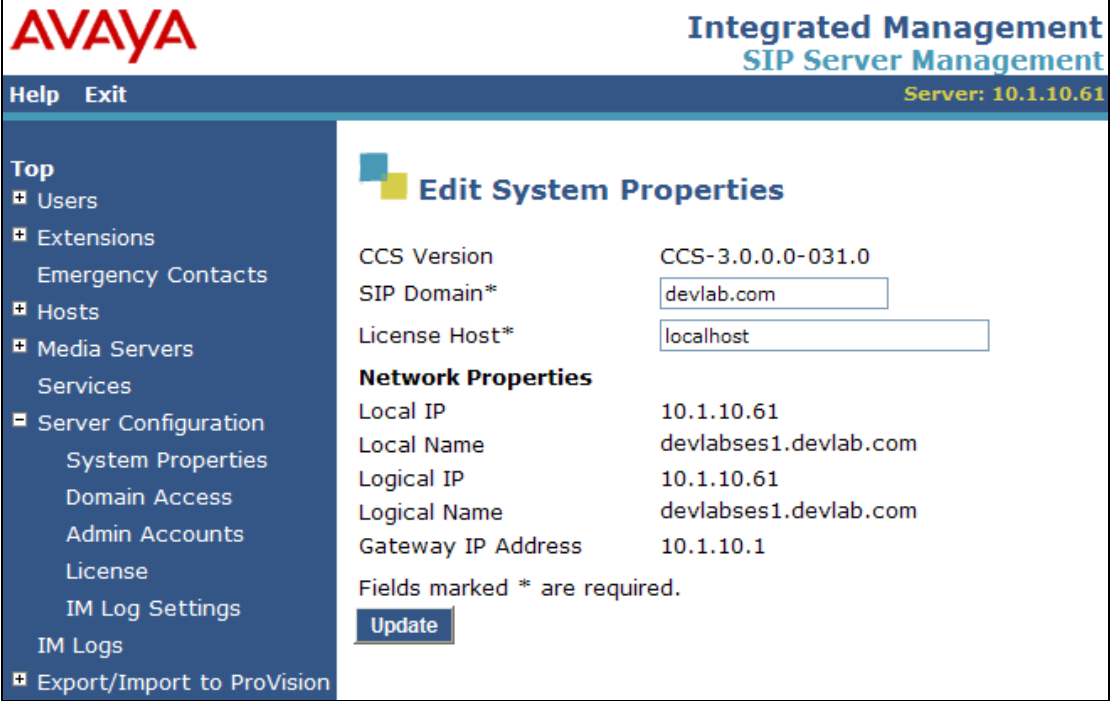## 3.6. IP Telephones Configuration

In the IP Telephones settings file (46xxsettings.txt), add the ComAssistant server IP address to the TPSLIST for all IP Telephone models that support data push. This will allow ComAssistant to push the calling and called party information to the IP Telephones. Below is an example for the 4620SW IP Telephone. The other models used in this test configuration (4610SW, 4621SW, 4625SW) are modified in the same way.

```
##############
# SETTINGS4620
##############
SET WMLHOME http://10.1.10.103/home.wml
SET WMLCODING ASCII
SET TPSLIST "10.1.10.159"
goto END
####### END OF 4620 IP Phone Settings #######
```
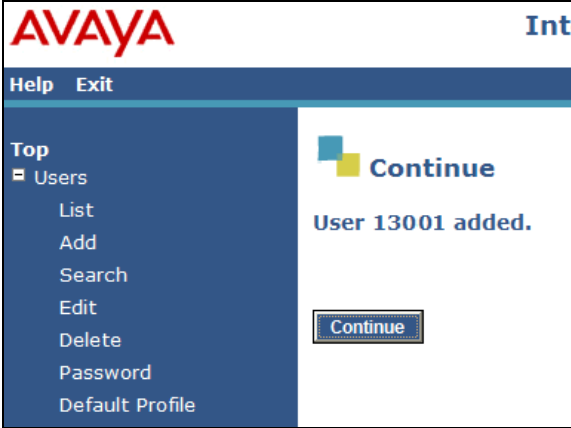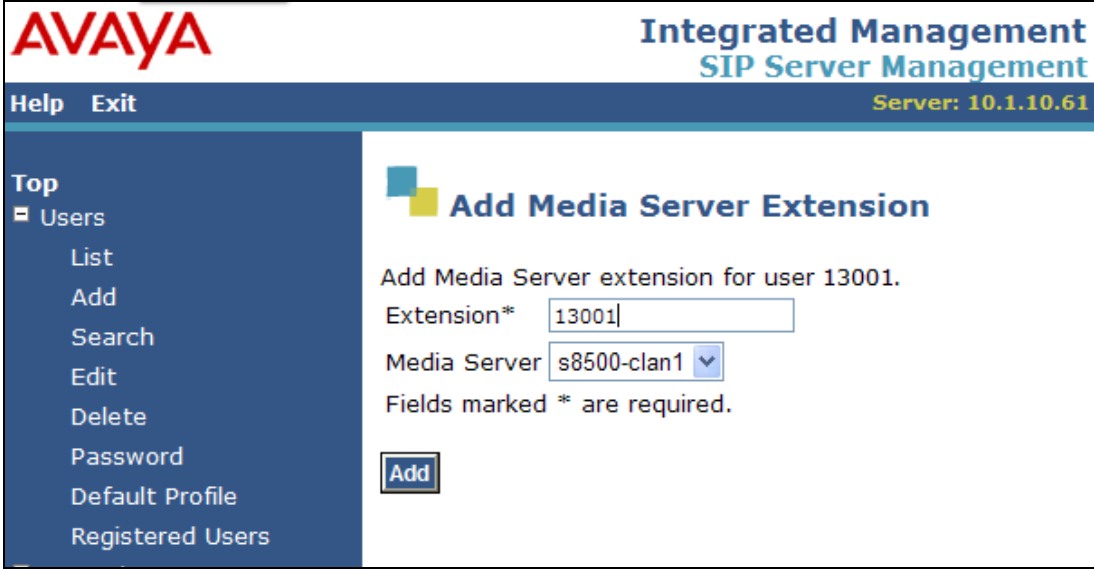
4. Configure Avaya SIP Enablement Services (SES)

The following steps describe the configuration of the Avaya SES Server to support eWings ComAssistant. The ComAssistant SIP Softphone stations register with the SES Server to communicate with Communication Manager. Other standard administration functions are covered in Reference [2].

Step	Description
	Administer Users
1.	The Avaya SES Server is configured using a web browser. Set the URL of the browser to **http://<IP Address of SES>/admin**, and log in as **admin** using the appropriate administrator password.
2.	Click **Launch Administration Web Interface**.

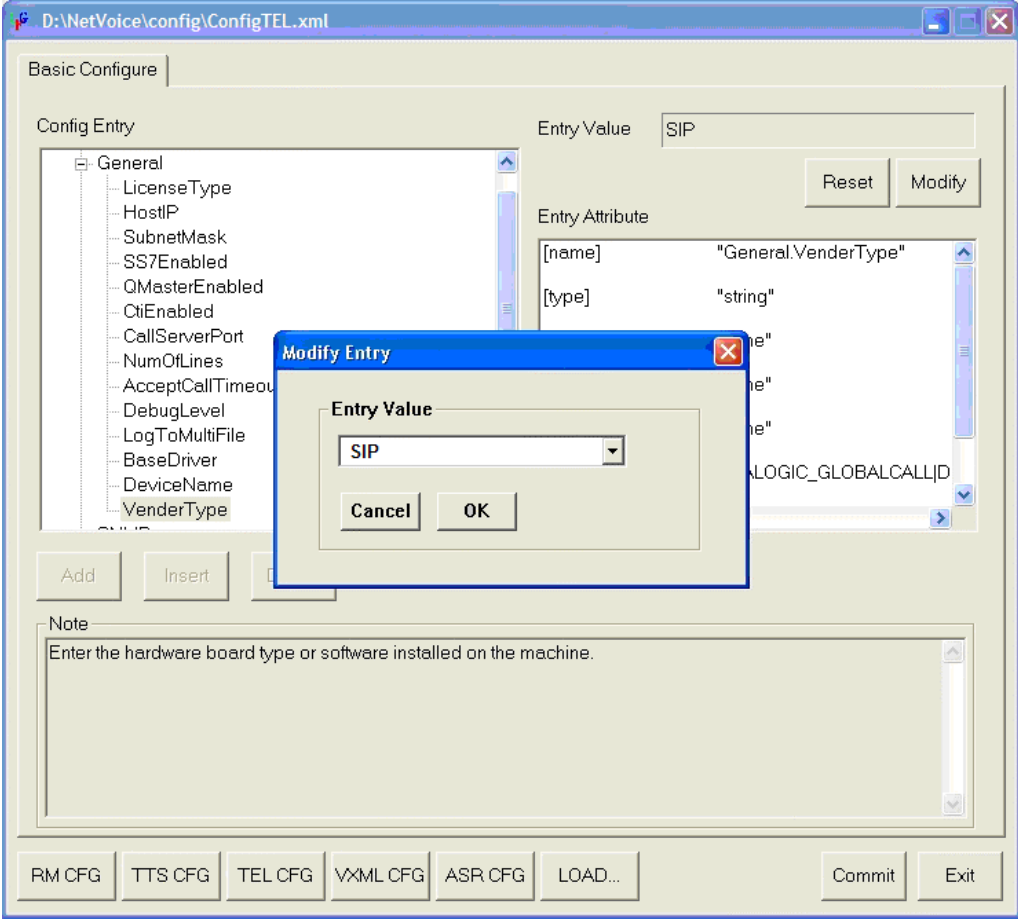| Step	Description
3.	The SIP Server Management web interface will be displayed. Expand **Server Configuration** on the left side of the page and click **System Properties**. Note down **SIP Domain** and **Logical IP** for the configuration of ComAssistant Server in Section 5.

Step	Description
4.	Expand **Users** on the left side of the page and click **Add**. Fill in the required fields (indicated by *). In the screen below, the user correspond to one of the extensions created in Section 3.1. Enter the extension number in the **Primary Handle**, assign values for **First Name** and **Last Name** and assign the same value for **Password** and **Confirm Password**. The **Host** field should be set to the name of the SES Home or Home/Edge server to which the ComAssistant Server will register. Check the box **Add Media Server Extension** and click **Add**. **Note:** ComAssistant requires that the all **Users** have the same password. ![Avaya Integrated Management SIP Server Management Add User screen with Primary Handle 13001, Password fields filled, Host 10.1.10.61, First Name 13001, Last Name eWings, Add Media Server Extension checked]

Step	Description
5.	The confirmation page will be displayed. Click **Continue**.
6.	The Add Media Server Extension page will be displayed. Use the same value as **Primary Handle** in Step 4 for **Extension** and select the appropriate **Media Server**. Click **Add**.
7.	Repeat Steps 4 to 6 to create the Users and Media Server Extensions for the rest of the ComAssistant SIP Softphone stations. Click **Update** to commit the changes to the database.
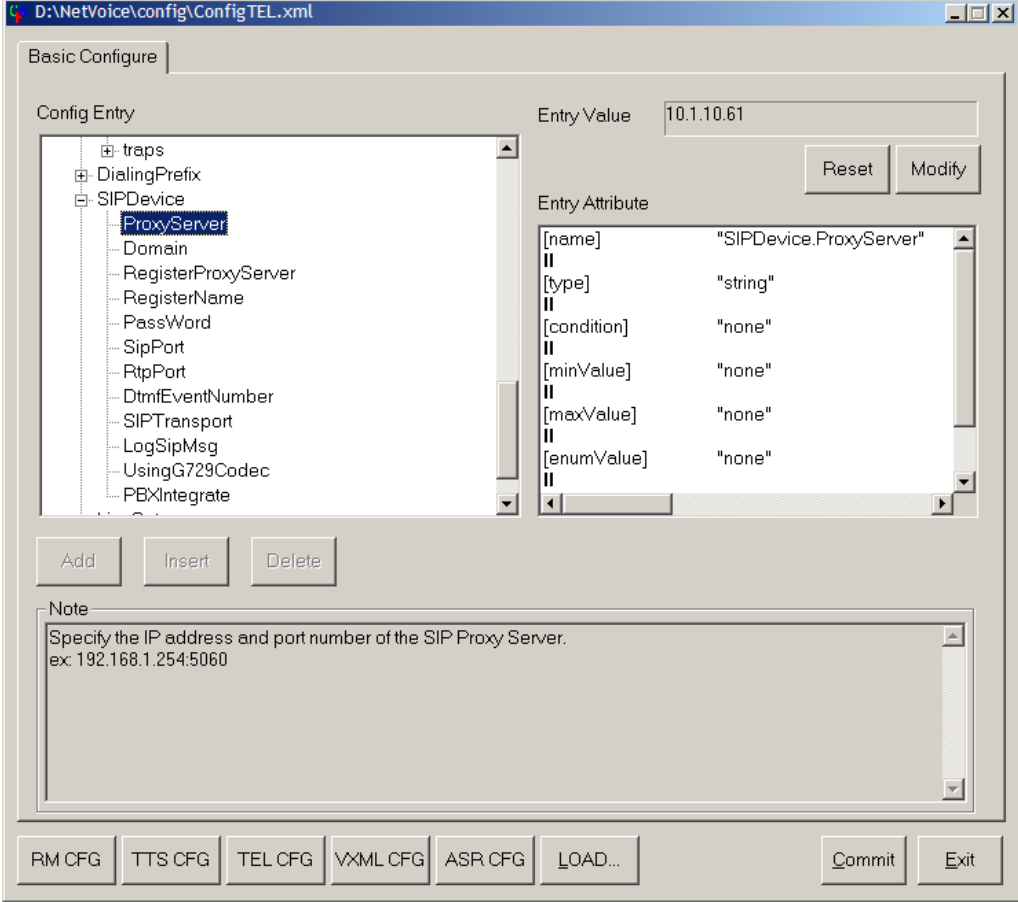
5. Configure the eWings ComAssistant
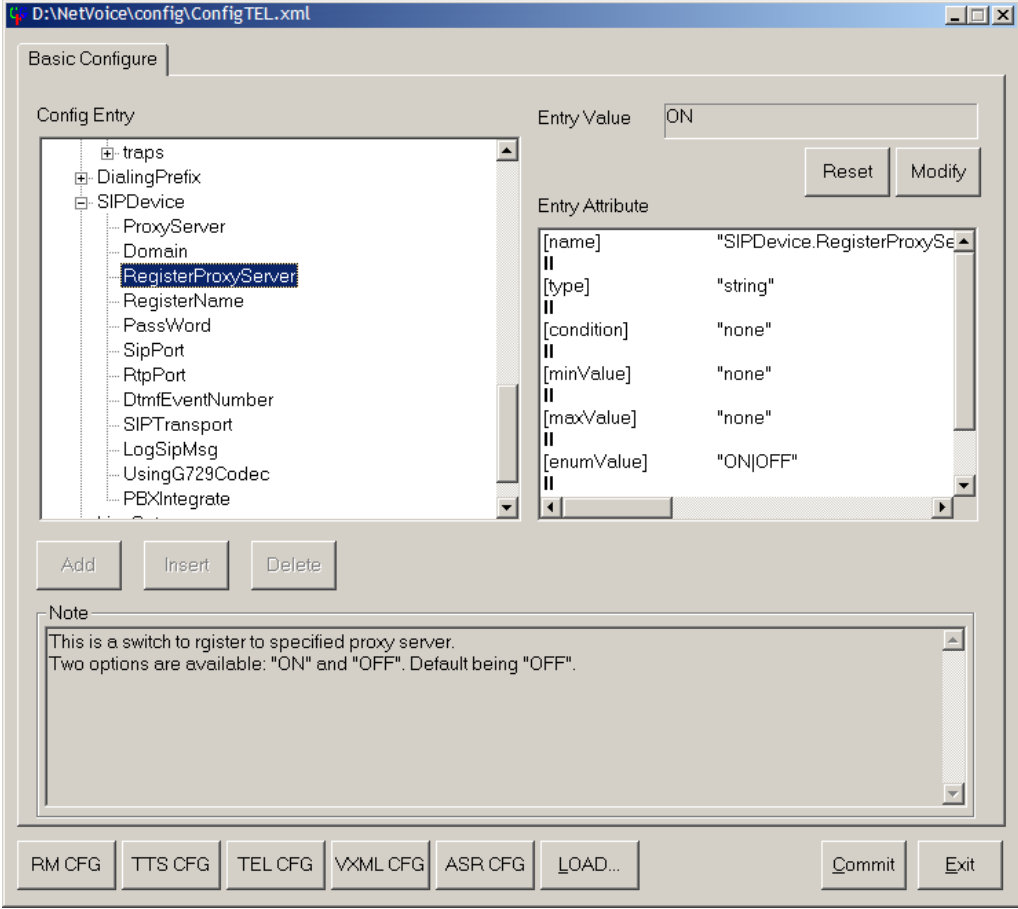
These Application Notes address provisioning of the eWings ComAssistant as it relates to the integration with Avaya Communication Manager using the Session Initiation Protocol. For all other provisioning information such as eWings ComAssistant software installation, Speech Recognition assignment, Telephone Directory creation and License Key installation, please refer to the eWings ComAssistant Administrator Guide available on the eWings Software Installation CD.
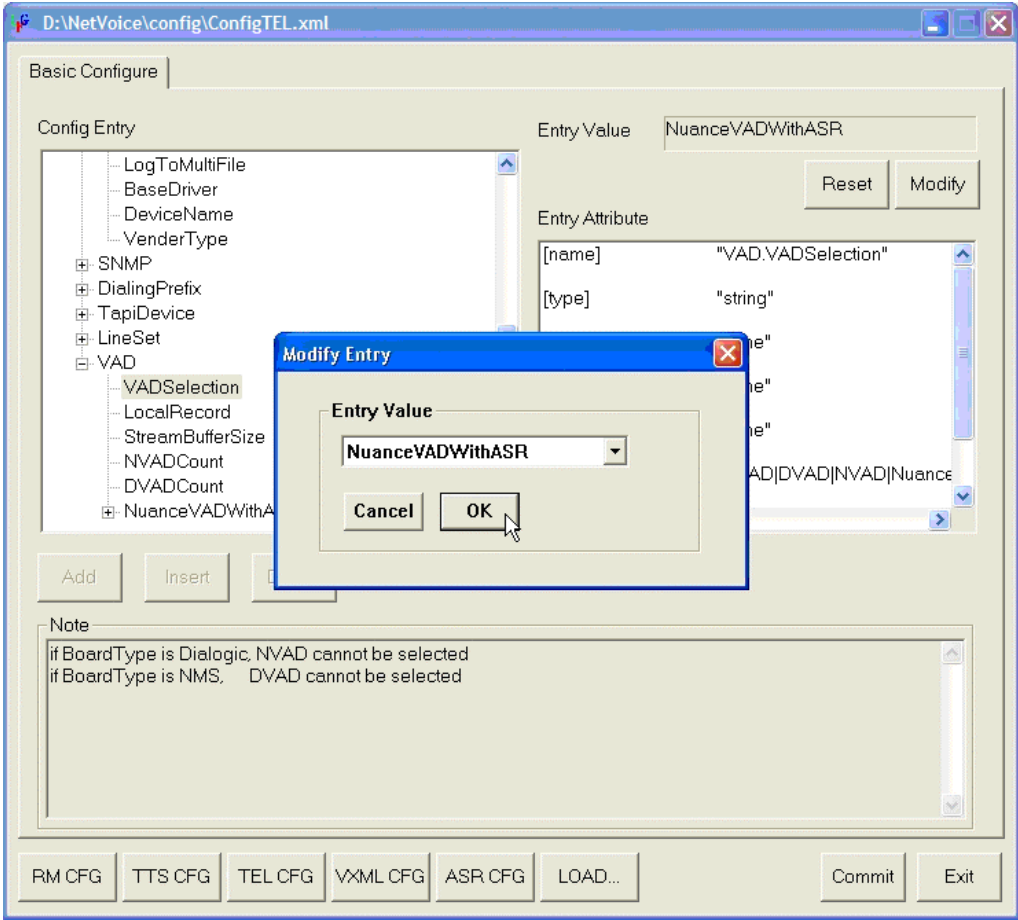
Step	Description
	Configuring PBX Connection
1.	Log in to the ComAssistant server as administrator and go to **Start → Run**. In the Run window that appears, type **D:\NetVoice\ConfigTool.exe** to execute configuration tool.
2.	Click on **TEL CFG** and expand the node **Configure**.
3.	Expand the node **General** and click on **VenderType**. Click **Modify** to set the PBX connection interface. In the Modify Entry window that appears, select **SIP** from the drop-down list and click **OK**.

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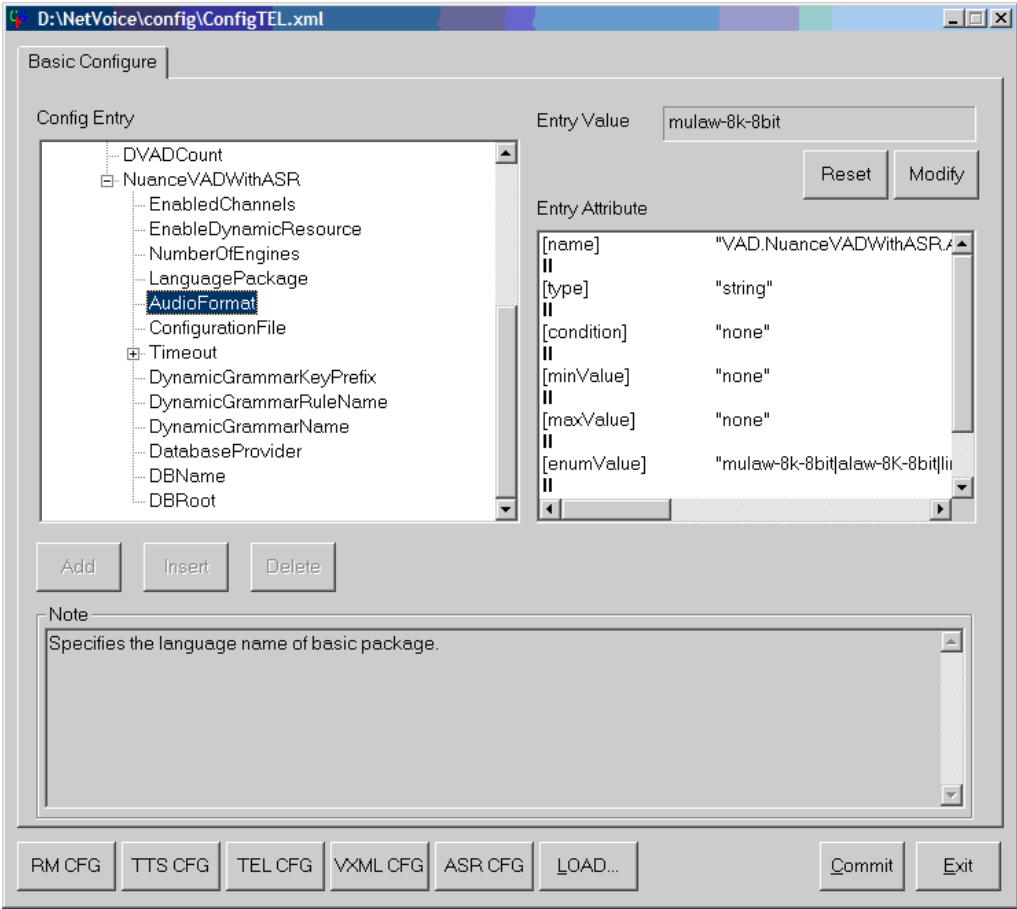
Step	Description
4.	To set the number of ports that ComAssistant will use, expand the node **General** and click on **NumOfLines**. Click **Modify** and in the Modify Entry window that appears, enter **5** (or a number corresponding to the number of SIP Softphone stations used by ComAssistant) and click **OK**.
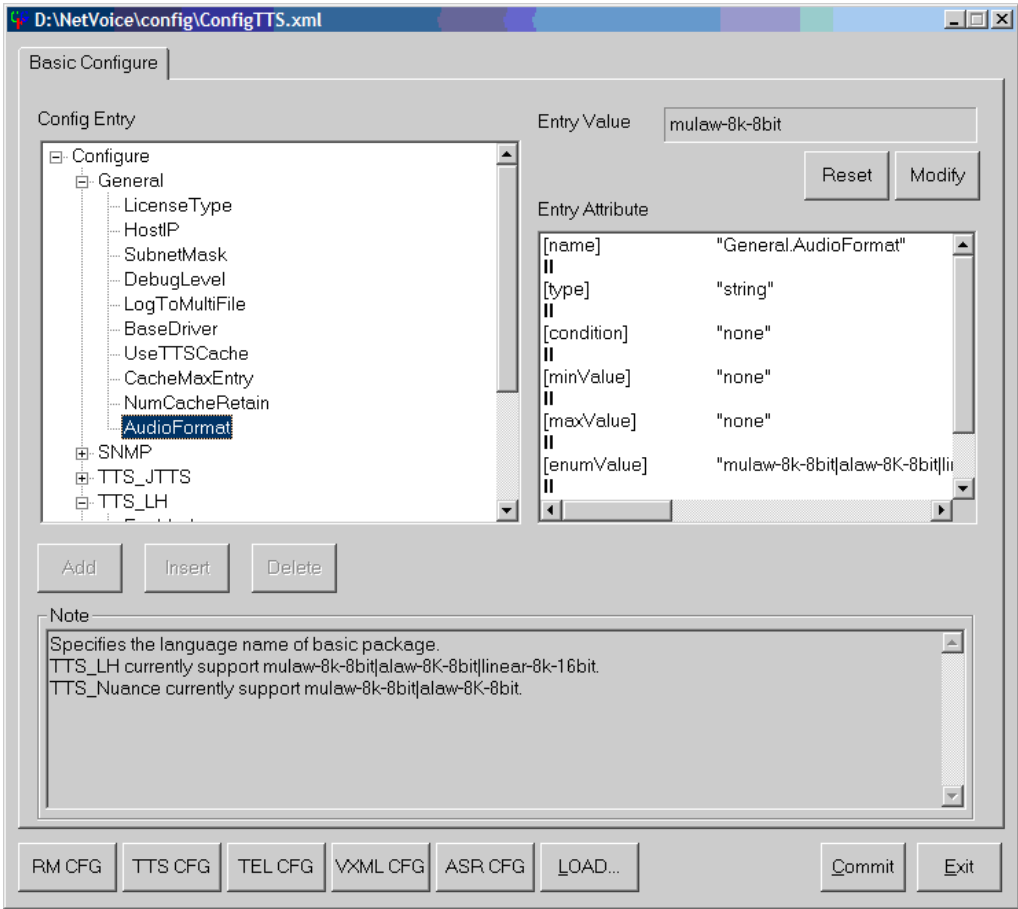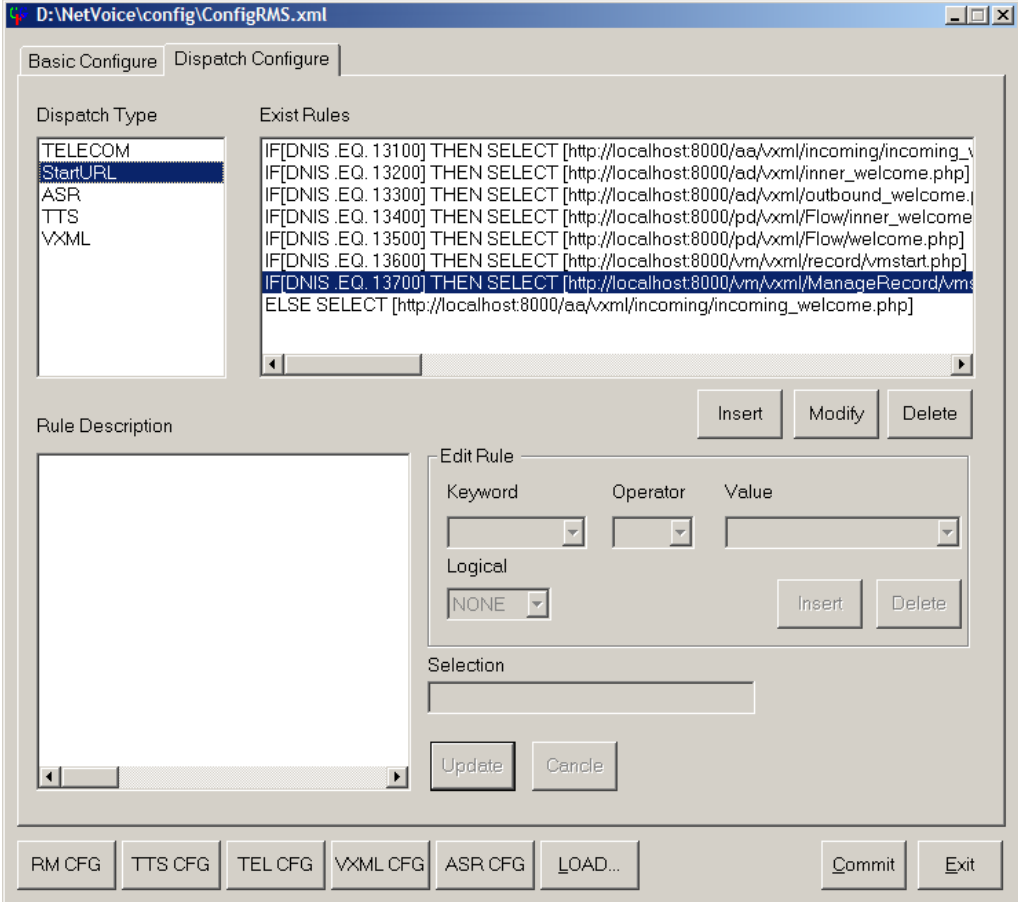
Step	Description
5.	Expand the node **SIPDevice** and click on **ProxyServer**. Click **Modify** and in the Modify Entry window that appears, enter the IP Address of the SES Server and click **OK**. In the same way, set **Domain** to the SIP Domain used in the test configuration. These settings must match the values noted down in Section 4 Step 3.

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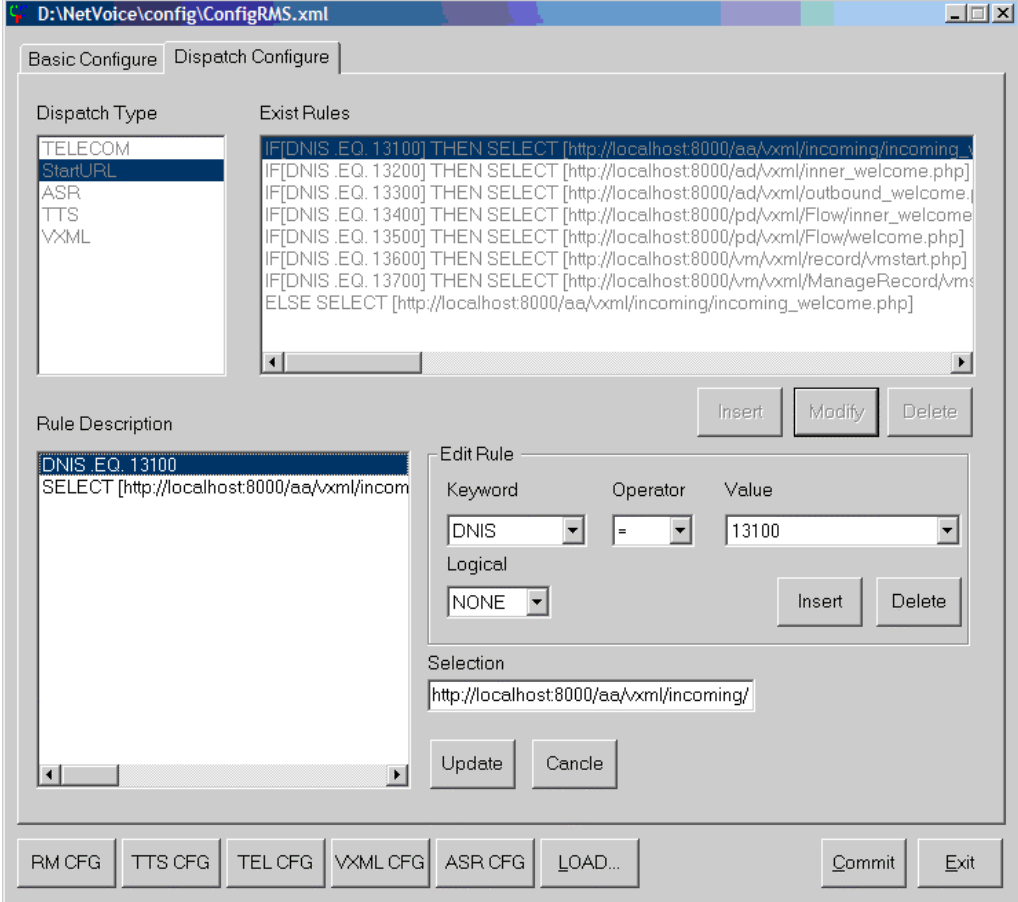
Step	Description
6.	Click on **RegisterProxyServer**. Click **Modify** and in the Modify Entry window that appears, select **ON** and click **OK**. In the same way, set **RegisterName** to the first User Handle and **PassWord** to the password as created in Section 4 Step 4. Set **SipPort** to **5060**, **RtpPort** to **8000**, **DtmfEventNumber** to **96**, **SIPTransport** to **UDP**, **UsingG729Codec** to **ON** and **PBXIntegrate** to **AVAYA**.
	Configuring TTS and ASR Audio Format
7.	Expand **VAD** to set voice activity detection and speech recognition parameters.

Step	Description
8.	Click **VADSelection** and click **Modify**. In the Modify Entry window that appears, select **NuanceVADWithASR** from the drop-down list and click **OK**.
9.	Expand the node **NuanceVADWithASR** and click on **EnableDynamicResource**. Click **Modify** and select **TRUE**.
10.	Click on **NumberOfEngines**. Click **Modify** and type the amount of ASR port which was purchased for the system.

Step	Description
11.	Click on **AudioFormat**. Click **Modify** and in the Modify Entry window that appears, select **mulaw-8k-8bit** from the drop-down list and click **OK**.

Step	Description
12.	Click on **TTS CFG** and expand the node **Configure**. Expand the node **General** and click on **AudioFormat**. Click **Modify** and in the Modify Entry window that appears, select **mulaw-8k-8bit** from the drop-down list and click **OK**.

Step	Description
13.	Click **Commit** to apply and save all configurations. Restart the ComAssistant system services to activate the changes.
	Configuring Call Route Rules
14.	Log in to the ComAssistant server as administrator and go to **Start → Run**. In the Run window that appears, type **D:\NetVoice\ConfigTool.exe** to execute configuration tool.

Step	Description
15.	Click on **RM CFG** and click on the **Dispatch Configure** tab. Select **StartURL** in the *Dispatch Type* list. eWings ComAssistant is a VoiceXML platform and uses web technology to provide service. The VoiceXML start URL for each service is as follows: • Auto Attendant Service URL http://localhost:8000/aa/vxml/incoming/incoming_welcome.php • Auto Dialer Internal Service URL http://localhost:8000/ad/vxml/inner_welcome.php • Auto Dialer External Service URL http://localhost:8000/ad/vxml/outbound_welcome.php • Personal Dialer Internal Service URL http://localhost:8000/pd/vxml/flow/inner_welcome.php • Personal Dialer External Service URL http://localhost:8000/pd/vxml/flow/welcome.php • Voice Message Recording Service URL http://localhost:8000/vm/vxml/Record/vmstart.php • Voice Message Retrieval Service URL http://localhost:8000/vm/vxml/ManageRecord/vmstart.php ![D:\NetVoice\config\ConfigRMS.xml dialog box showing Dispatch Configure tab with Dispatch Type list (TELECOM, StartURL, ASR, TTS, VXML) and Exist Rules containing IF[DNIS .EQ. 13100] THEN SELECT rules]

Step	Description
16.	In the **Exist Rules** list, select the rule for Auto Attendant Service and click **Modify**. Set **Keyword** to **DNIS**, **Operator** to = and **Value** to **13100**. This must correspond to the Hunt Group extension created for the Auto Attendant service on Communication Manager. Click on **Update**.
17.	Repeat Step 16 for the rest of the ComAssistant services.
18.	Click **Commit** to apply and save all configurations.
19.	Click **Basic Configure** to check the DNIS number table. Expand the node **DNIS1** and select **Callee**. If the value is not ***** (star), click **Modify** to change the value and click **Commit** to save the setting.

Step	Description
20.	Using Internet Explorer, log in to the ComAssistant Administration Interface. Set **Integration PBX Type** to **Avaya Media Server**. Set **Avaya SNMP Host** to the IP address of the Media Server and set **Avaya SNMP Community** to the string assigned in Section 3.4 Step 3. Set the **Transfer Type** to **Supervised Transfer**. Click **Submit**.

6. Interoperability Compliance Testing

The Interoperability Compliance Testing included feature functionality testing only. Feature functionality testing examined the ComAssistant's ability to properly transfer inbound and internal calls to the appropriate destination extension (digital, IP Telephone) and its ability to record and playback voice messages.

6.1. General Test Approach

Feature functionality testing was performed manually. Inbound calls were made to the system from ISDN-BRI trunks connected to the central office as well as internal extensions. The following call scenarios were tested using the test configuration diagram shown in **Figure 1**:

- Auto Dialer - ability to make calls to other user extensions using speech and DTMF.
- Personal Dialer - ability to make calls to other user extensions using speech and DTMF.
- Auto Attendant - ability to serve incoming calls and transfer them to user extensions using speech and DTMF.
- Voice Mail - ability to record and play back voice messages.

Results were tabulated based on whether the call was being transferred successfully to the correct extension. Voice Mail service was tested by leaving voice messages for different voice mailboxes. The voice messages were then played back and verified.

6.2. Test Results

All test cases passed successfully.

7. Verification Steps

The following steps can be used to verify system operation after a field installation:

- On the SES, verify that the ComAssistant lines are listed in the **Registered Users** page.
- Place a call to the Auto Attendant service hunt group from an internal extension. Verify that the Auto Attendant Welcome greeting plays and either speak a name or department, or enter a valid extension number. Verify the call is transferred to the correct extension.
- Place a call to the Auto Dialer service hunt group from an internal extension. Verify that the Auto Dialer Welcome greeting plays and either speak a name or department, or enter a valid extension number. Verify the call is transferred to the correct extension.
- Place a call to the Voice Message Recording service hunt group from an internal extension. Verify that the Voice Message Recording Welcome greeting plays and enter a valid mailbox extension to leave a voice message.
- Place a call to the Voice Message Retrieval service hunt group from an internal extension. Verify that the Voice Message Retrieval Welcome greeting plays and follow the prompts to retrieve the voice message.

8. Support

For technical support on eWings ComAssistant, contact eWings Support Team at:

- Phone: +886 (2) 27973088 Extension 1133
- Fax: +886 (2) 27973800
- Email: etac@ewingstech.com

9. Conclusion

These Application Notes describe the required configuration steps for eWings Communication Assistant to successfully interoperate with Avaya Communication Manager using Avaya SIP Enablement Services. All test cases were completed successfully.

10. Additional References

The following documents can be found at http://support.avaya.com:

[1] Administrator's Guide for Avaya Communication Manager, 03-300509, Issue 1, June 2005
[2] SIP Support in Release 3.0 of Avaya Communication Manager Running on the Avaya S8300, S8500, S8500B, S8700, and 8710 Media Server, 555-245-206, Issue 5, June 2005
[3] Avaya Extension to Cellular and Off-PBX Station (OPS), Installation and Administration Guide Release 3.0, 210-100-500, Version 6.0, Issue 9, June 2005

The following documents are available from eWings:

- eWings ComAssistant 1.3 Installation Guide
- eWings ComAssistant 1.3 Administration Guide
- eWings ComAssistant 1.3 User Guide

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