Vocera Rauland SIP Integration Installation and Configuration Guide

Vocera Server Version 5.2.3 Compatible

Notice

Contents

Introduction

Learn how to install and configure the Vocera Rauland Integration SIP Gateway Server so you can use Vocera with Rauland Responder 5 and the nurse call system.

Vocera Communications enables hands-free, voice-controlled wireless voice communication using the wearable Vocera badge throughout a wireless networked building or campus.

About This Guide

Learn how to use this guide and more about it's contents and organization.

This guide provides installation and configuration instructions for Vocera Voice Server Software and Vocera client integration with Rauland Responder 5 software components. Its purpose is to help you install and configure the integration solution successfully.

The information in this guide is organized into the following parts:

- System Requirements on page 5 describes the necessary specifications your computer and servers must have in order to use the Vocera Rauland Integration solution.
- About the Vocera Rauland Integration SIP Gateway Server on page 10 provide an overview of the integration solution.
- Running the Vocera Rauland Integration SIP Gateway Server Installation Program on page 6 describes how to install Vocera RSIP Gateway software.
- Setting up the Vocera Rauland Integration SIP Gateway Server on page 13 describes how to configure the RSIP Gateway.
- Normalizing and Mapping RSIP Gateway Server Data on page 15 describes how to work with a normalizer to map data between Rauland and Vocera.

For Vocera Voice Server Installation, configuration, Infrastructure, and administration instructions, refer to the following Vocera guides:

- *Vocera Infrastructure Planning Guide*
- *Vocera Voice Server Installation Guide*
- *Vocera Voice Server Administration Console Guide*
- *Vocera Badge Configuration Guide*
- *Vocera Smartphone Configuration Guide*

Vocera Technical Support Tools

Learn how to work with Vocera Technical Support.

When you install the Vocera Voice Server, the installation program also installs tools that can be used to facilitate the exchange of Vocera Voice Server information with Vocera Technical Support to aid in troubleshooting. These tools provide the best way to send server logs and other debugging data to Vocera Technical Support.

For more information on how and when to use the tools, contact Vocera Customer Support.

Electronic Software Distribution

Learn how to download Vocera Voice Server software.

Vocera provides software delivery through an electronic distribution system where you'll receive an email containing a link directly to the download site for the software.

To download Vocera software:

1. Open the email from Vocera containing download instructions.
2. Click the download link.
3. Review and accept the End User License Agreement.

   Make sure the I confirm I have read and accept the statement box is checked.
4. Check the files and folders you want to download. Make sure you select the ISO image file (the file with the extension `.iso`), which contains the DVD contents.
5. Click Download.
6. Specify a location for the downloaded files.
7. After the download is finished, use a ZIP utility to extract the contents of the ISO image file, or use DVD burning software to burn the ISO image file to a DVD.

   Note: If you burn a DVD, use DVD+R DL 8.5 GB media.

System Requirements

Learn about the requirements of the Vocera Communication solution.

Server Requirements

This section contains basic information about the Vocera Voice Server requirements.

For detailed information on supported operating systems, recommended sizing guidelines and more, see the Vocera Voice Server Sizing Matrix.

Installing Vocera Rauland Integration SIP Gateway Server Software

Learn how to install the Vocera Rauland Integration SIP Gateway Server software on the Vocera SIP Gateway.

Running the Vocera Rauland Integration SIP Gateway Server Installation Program

Follow these steps to install the Vocera Rauland Integration SIP Gateway Server program in your environment.

Vocera software is distributed electronically using an ISO image file. Before installing and setting up Vocera on your system, follow the steps in Electronic Software Distribution on page 5.

Note: Be sure to load a Vocera Rauland Direct SIP (RSIP) Integration software enabled license key on the Vocera Voice Server. Contact Vocera Technical Support for additional information about obtaining an updated license.

Use the following steps to install Vocera software components.

1. Log in to the computer with administrator privileges.
2. Locate and double click the Vocera Suite Installer file.

   V VoceraSuiteInstaller.exe

   Figure 1: Vocera Suite Installer file

   The Welcome window opens.
3. On the Welcome window, click Next to continue with the installation program.
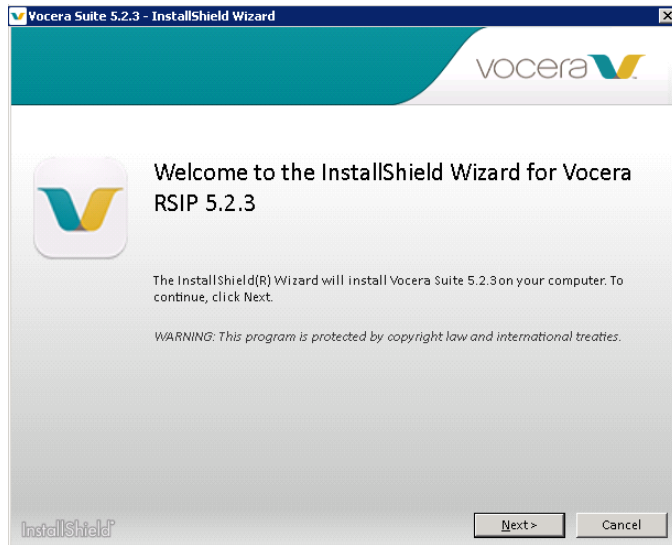
Figure 2: Welcome Window

The License Agreement window opens.

4. Review the license agreement before accepting the terms in the agreement and click Next.
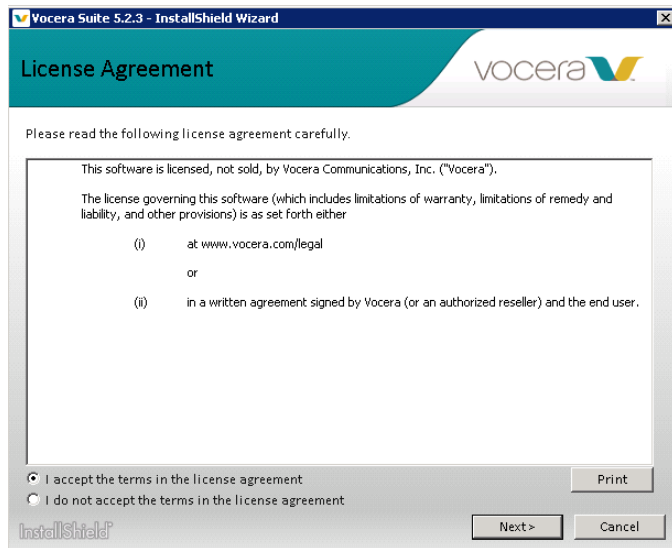
Figure 3: License Agreement window

The Installation Configuration window opens.

5. In the installation configuration window, select the local IP address where Vocera Rauland Direct SIP Integration server will be installed. Click Next.
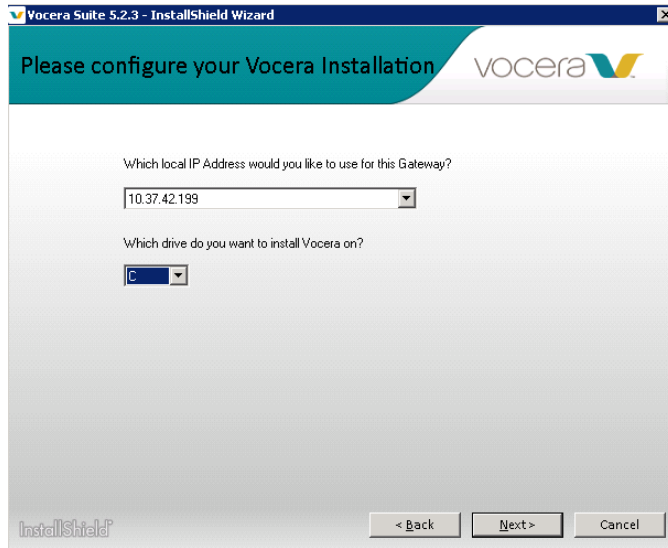
Figure 4: Installation Configuration window

An additional Vocera configuration window opens.

6. In the next installation configuration window, enter the IP address for the Vocera Server. Click Install.
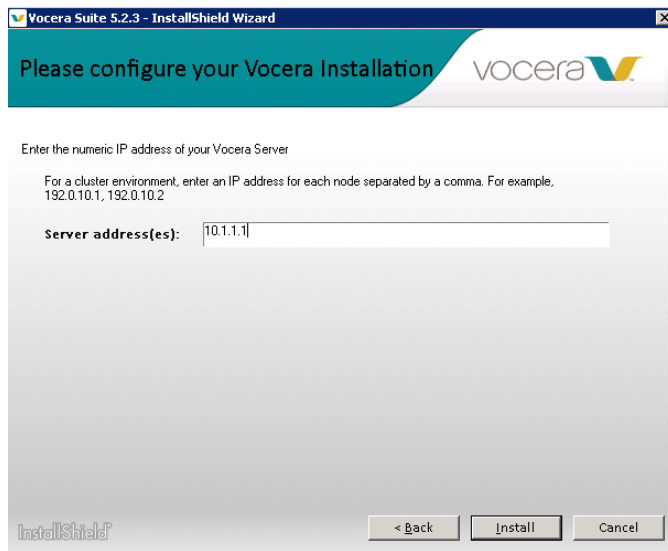
Figure 5: Installation Configuration window

The Vocera installer is launched with a progress bar showing the status of the installation.

7. When the installation is finished, a window appears announcing that the installation is complete. Click Finish.
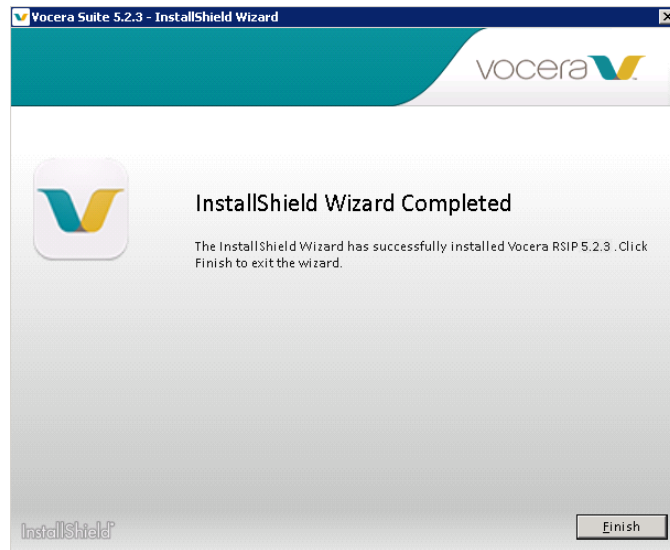
8. After the installation program completes, the installer opens a window where you can choose to restart your system.
Congratulations! Your installation is complete.

About the Vocera Rauland Integration SIP Gateway Server

The Vocera Rauland Integration SIP Gateway Server (RSIP) solution integrates Rauland Responder software, and the Rauland-Borg nurse call system with the Vocera.

Vocera Rauland Integration SIP Gateway Server Overview

Patient calls or staff services from the Responder system sends calls to groups in the Vocera system where patients and care givers interact directly from the bedside and Vocera client devices.

When a patient request comes through the Rauland system, the request is sent to the Vocera Rauland Integration SIP Gateway Server as an SIP / RTP message. The SIP message contains the text of the alarm and the user name of the recipient. When the RSIP Gateway Server receives the message, it parses the alarm text using the rules in the normalizer and assigns the configured priority and message response options.

Once assigned, the text of the message is passed through an optional string replacement transform which searches and replaces the text of the alarm in order to make it more appropriate for display and enunciation on a Vocera device. After the normalizer, and string replacement transform file have been applied, the message is sent to the specified user.

For Staff Assignment (SA), patient requests come through the Rauland system to the Vocera Care Team Sync (CTS) Server and directly to Vocera Staff Assignment.

For more information about Vocera Care Team Sync, see the *Vocera Care Team Sync User Guide*.

> **Note:** The synchronization between Vocera Care Team Sync (CTS) and Vocera Staff Assignment is complex and requires engagement with Vocera Professional Services.
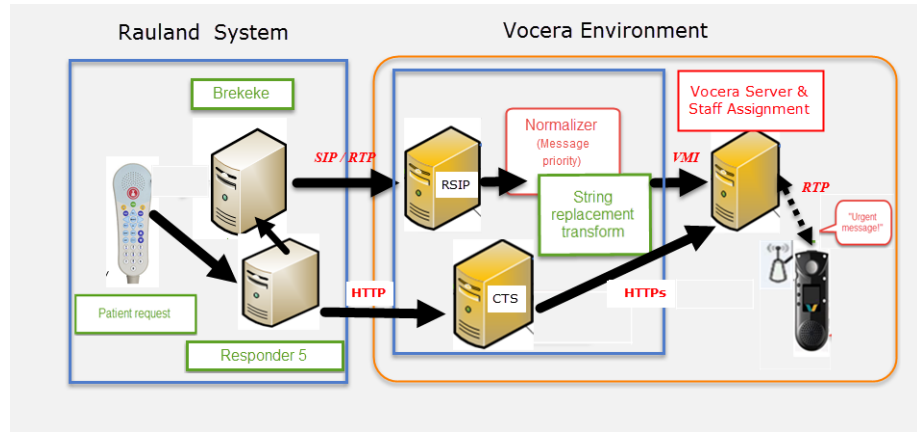
Figure 6: Vocera Rauland Integration SIP Gateway Server

Normal Nurse Call Flow

This section shows a table containing the technical details related to the way the Rauland system servers messages and the Vocera Rauland Integration SIP Gateway Server VMI strings interact when alerts are sent to Vocera devices in the context of the nurse call flow.

Table 1: Call flow for a normal Rauland call

Step	Data / Voice	Notes
Patient pushes the Nurse Call button.	Data	Brekeke server provides primary notification. The Notification is sent to the RSIP Gateway Server.
Based on Rauland workflow assignments, a RSIP INVITE message is sent to the Vocera User ID assigned to the Vocera user. The Brekeke SIP Server sends the SIP INVITE message to RSIP Gateway Server.	Data	This event drives a call to the Vocera Extension assigned to the user or group.
RSIP Gateway Server parses the FROM and TO strings from the Berkeke server in order to match it to the normalizer used to determine the message priority and handles the message accordingly.	Data	RSIP Gateway Server sends the SIP *preliminary* response to the Rauland system servers.

Step	Data / Voice	Notes
A nurse answers the call. Audio (RTP) is established between the Vocera device (such as a badge).	Voice / Data	RSIP Gateway Server sends the SIP **complete** response to the Rauland system servers.

Message Priority Handling

Learn about how each message priority affects badge notifications.

Message priority affects the way the badge plays notifications and alerts. Message type include:

- normal
- high
- urgent

When a nurse receives the call, the caller ID appears on the screen of the Vocera client device. Depending on the VMI message priority, a klunk (or two) is heard on the Vocera client device and the caller ID displays a string consisting of Area + Room + Bed + Call / Service.

The table below provides a description of the message type and the default behavior.

Message type	Badge announcement
Normal	One klunk is heard on the Vocera client device and the caller ID displays a string consisting of Area + Room + Bed + Call / Service.
High	Two klunks are heard on the Vocera client device and the caller ID displays a string consisting of Area + Room + Bed + Call / Service.
Urgent	Two klunks are heard on the Vocera client device and the Genie announces "Urgent Call". The caller ID displays a string consisting of Area + Room + Bed + Call / Service.

Note: You can change the way each message type is handled. See the *Vocera Messaging Interface Guide* for more information on working with VMI messages.

Setting up the Vocera Rauland Integration SIP Gateway Server

Learn how to configure the RSIP Gateway Server.

Configuring the RSIP Gateway Server involves working with the RSIP Gateway Server properties file.

About the Vocera Rauland Integration SIP Gateway Server Properties File

The RSIP Gateway Server properties file (`rsipproperties.txt`) allows you set values that control the behavior of the Vocera Rauland Integration SIP Gateway Server.

The properties file is located in the `\vocera\telephony\rsip` folder on the computer where RSIP Gateway Server is installed. It is a simple text file, and you can use any text editor, such as Wordpad, to edit it.

Modifying rsipproperties.txt

Learn the specific steps that you need to perform in order to update the RSIP Gateway Server properties file.

To modify the integration properties file, perform the following steps:

1. On the Vocera Rauland Integration SIP Gateway Server, navigate to and open `rsipproperties.txt` file in a text editor.
2. Make changes to the properties according to your environment.

    The table below details the available properties and provides value examples.

Table 2: RSIP properties

Property	Description	Default	Value example
RSipIPAddress	Enter an IP address which authenticates the Rauland IP address with the RSIP Stack. **Note:** You can configure more than one IP address.	None	`10.1.7.32`

Property	Description	Default	Value example
RSipVMIClientID	Specifies the name of the Vocera Voice Server from which the unique VMI client message originates.	None	**RaulandClienta** **Note:** The client ID must consist of the following character types: • alphanumeric • apostrophe • backslashes • hyphens • period • underscores For example, client IDs may be defined to include IP addresses.
RSipVMIResponses	The response options heard on the client.	• accept • reject	You can use the default or type your own Genie responses. For example, • answer • decline

3. Save the `rsipproperties.txt` file.
4. Stop the RSIP Gateway Server and start it again. On the Control Panel for RSIP Gateway Server , choose Run > Stop, and then choose Run > Start.

Example of the RSIP Gateway Server Properties File

Review an example of the RSIP Gateway Server properties file.

Below you'll find an example of the `rsipproperties.txt` which includes a description of each property followed by an example showing how to set RSIP property values.

```
If your Vocera system has direct SIP integration with a Nurse Call system
 (such as Rauland Responder 5), configure the integration using the
 properties below.

RSipIPAddress = The IP address of the Nurse Call system's SIP server.
 For Rauland Responder 5, enter the Brekeke SIP Server in standard dotted-
decimal notation (for example,192.168.15.10).


RSipVMIClientID = The client ID used to uniquely identify each RSIP Gateway
 when VMI messages are sent to the Vocera Server. Note: Use alpha characters
 only. This value cannot contain backslashes, hyphens, underscores, or
 apostrophes.


RSipVMIResponses = A comma-delimited list containing the text strings used
 to identify vmi responses, for example, "accept, reject".


RSipIPAddress = 10.1.7.32
RSipVMIClientID = RaulandClient
RSipVMIResponses = accept, reject
```

Normalizing and Mapping RSIP Gateway Server Data

To prepare your Rauland system to integrate with the Vocera Voice Server, you must analyze the two systems and prepare the appropriate normalization and mapping rules that allow the two systems to share data with one another.

Normalizing Data

The Vocera messaging normalizer allows you to map RSIP Gateway Server data by specifying regular expressions that search and replace patient location and patient ID values in the Rauland feed so they are suitable for the Vocera system. A regular expression is a string that is used to find and manipulate text.

If you are unfamiliar with regular expressions, Vocera recommends that you brush up on them before tackling the task of normalizing patient locations and patient IDs. Here are just a few books that will help you learn how to use regular expressions:

- Introducing Regular Expressions - by Michael Fitzgerald
- SAMS Teach Yourself Regular Expressions in 10 Minutes - by Ben Forta
- Mastering Regular Expressions - by Jeffrey E.F. Friedl

There are also several regular expression tutorials and cheat sheets that you can find online.

Why would you need to normalize patient location values? For several reasons but basically because Rauland data such as patient location values do not conform to the conventions for Vocera Voice Server group names.

The example below contains the basic structure of a normalizer XML file and shows the variables that you update to define your mapping rules.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<adt-event-map>
  <event key="event_id"> <-- Define mapping rule here --></event>
  <event key="event_id"> <-- Define mapping rule here --></event>
  <event key="event_id"> <-- Define mapping rule here --></event>
  <event key="event_id"> <-- Define mapping rule here --></event>
</adt-event-map>
```

Working with the Vocera RSIP Gateway ServerMessage Normalizer

This section describes how to use and update the Vocera RSIP Gateway Server (RSIP) message normalizer file in order to send and receive messages from the Rauland environment on Vocera client devices.

The RSIP Message Normalizer is used to map incoming SIP INVITE fields from Rauland calls to VMI message parameters sent to the Vocera Voice Server.

Vocera provides two files which make mapping data between the Rauland system and Vocera Voice Server environment easy. The files are located in the same directory as the RSIP properties file which you can find in `\vocera\telephony\rsip`. These files include:

- rsipmessagenormalizer_example.xml: An example utilizing real data which suggests one way to map your data.
- rsipmessagenormalizer.xml: The XML file that you need to update according to the mapping requirements in your environment.

Modifying the Normalizer File

Learn how to update in the RSIP normalizer file in order to map data from Rauland to Vocera systems.

To modify `rsipmessagenormalizer.xml`:

1. On the Vocera RSIP Gateway Server, open the `\vocera\telephony\rsip\rsipmessagenormalizer.xml` file in a text editor.
2. Make changes to the properties according to your environment.
   See Normalizer Inputs on page 16, Normalizer Mapping Variables on page 16, and Normalizer Outputs to VMI Parameters on page 17.
3. Save the `rsipmessagenormalaizer.xml` file.
4. Stop the Vocera RSIP Gateway Server and start it again. In the Control Panel for Vocera RSIP Gateway , choose Run > Stop, and then choose Run > Start.

Normalizer Inputs

This section outlines examples of the variables and values that you need to update in the Message Normalizer file (rsipmessagenormalizer.xml).

The RSIP Gateway Server uses fields from the SIP INVITE message as inputs to the normalizer.

The tables below shows the SIP messages field, variable that you need to update in the normalizer file, and resultant SIP message.

Table 3: SIP message variables and output examples

SIP message field	Message normalizer variable (input)	SIP invite (example)
To	$SIPToUser	9920030314
From	$SIPFromUser	30*303*1
Display Name	$SIPFromUser	ICU303_1 Bed Exit

See Example: SIP Invite Message on page 17, to a SIP invite message with highlighted fields.

Normalizer Mapping Variables

This section provides the normalizer output variables and values.

The normalizer maps the input variables ($SIPToUser, $SIPFromUser, $SIPDisplayName) to output variables that are then used to create VMI message parameters.

The tables below shows the normalizer variables and values.

Table 4: Normalizer variables and values

Message normalizer variable (output)	Values
$To	Text string
$From	Text string
$Message	Text string
$Priority	Urgent	High	Normal
$ResonseOptions	Yes	No

By editing the normalizer file (rsipmessagenormalizer.xml), the output variables can be set based on the input variable values.

From the table above:

- if the **$SIPDisplayName** in Normalizer has been updated with "Bed Exit":
  - **$Message** is set to the value of **$SIPDisplayName**
  - **$To** is set to the value of **$SIPToUse**r
  - **$From** is set to the value of **$SIPFromUser**
  - **$Priority** is set to "Urgent"
  - **$ResponseOptions** is set to "Yes"

See **Example: Vocera Message Normalizer** on page 18.

Normalizer Outputs to VMI Parameters

This section provides the normalizer output variables and values.

The normalizer output variables are used to create the VMI Message Parameters.

Note: the $From output variable is not used to generate the VMI parameters. $From is used as the Caller ID if the Rauland call is extended to the Vocera Voice Server.

The tables below shows the Message Parameters and description.

Table 5: VMI Message Parameters

VMI Message Parameters	Description
Login ID	Value of **$To**
Message	Value of **$Message**
Priority	Mapped value of **$Priority**
List of Responsibility	If the value of $ResponseOptions is "No", "List of Responses" is "". If the value of $ResponseOptions is "Yes", "List of Responses" is set to the property value of RSipVMIResponses in rsipproperties.txt.

Example: SIP Invite Message

This section provides an example of the SIP message field output after you update and run the normalizer.

The RSIP Message Normalizer is used to map incoming SIP INVITE fields from Rauland calls to VMI message parameters sent to the Vocera Voice Server. The fields highlighted in bold show the variable input from the Message Normalizer XML file.

SIP Invite Message field

INVITE sip:**9920030314**@10.199.42.156 SIP/2.0
From: **ICU303_1 Bed Exit**<sip:**30*303*1**@10.199.42.161:5060>;tag=579a6f0-
da2ac70a-13c4-55022-20dd28-7e772e34-20dd28
To: <sip:9920030314@10.199.42.156>
Call-ID: f6b8310-da2ac70a-13c4-55022-20dd28-55cf6336-20dd28
CSeq: 1 INVITE
Via: SIP/2.0/UDP 10.199.42.161:5060;rport;branch=z9hG4bK9d8a5a06f6eae0ca2fd-eb1bed59-6bff0ef7
Via: SIP/2.0/UDP 10.199.42.218:5060;branch=z9hG4bK-20dd28-805fe4fc-39edc376
Max-Forwards: 69
Supported: timer
Contact: <sip:30*303*1@10.199.42.161:5060>
Session-Expires: 1800
Min-SE: 90
Record-Route: <sip:10.199.42.161:5060;lr>
Content-Type: application/sdp
Content-Length: 192
v=0
o=RGS_out 2890844526 2890844526 IN IP4 10.199.42.161
s=Annunciation
c=IN IP4 10.199.42.161
t=0 0
m=audio 10588 RTP/AVP 101 0
a=rtpmap:0 PCMU/8000
a=rtpmap:101 telephone-event/8000

Example: Vocera Message Normalizer

This section shows the Vocera message normalizer example file
(rsipmessagenormalizer_example.xml) .

Example 1: Vocera message normalizer example file

```xml
<normalizer version="1.0.0">
 <entry>
  <format>$Message</format>
  <!-- Priority: urgent with response options -->
  <node>
   <input>$SIPDisplayName</input>
   <pattern>.*(Bed Exit).*</pattern>
   <variables>$Message,$Call</variables>
   <node>
    <input>$SIPToUser</input>
    <pattern>.*</pattern>
    <variables>$To</variables>
    <node>
     <input>$SIPFromUser</input>
     <pattern>.*</pattern>
     <variables>$From</variables>
     <node>
      <input>Urgent</input>
      <pattern>.*</pattern>
      <variables>$Priority</variables>
      <node>
       <input>Yes</input>
       <pattern>.*</pattern>
       <variables>$ResponseOptions</variables>
      </node>
     </node>
    </node>
   </node>
  </node>
 </entry>
</normalizer>
```

String Replacement for VMI Messages

Learn about changing the inaccurate or unacceptable Genie's response using the Vocera RSIP Gateway Serverstring replacement transform.

Genie responses are played directly from the invite message. In some instances these messages are not understandable or in an abbreviated form. This occurs because the Genie plays the message exactly as it is depicted in the invite message.

To remedy this the VMI message text (parameter) can be modified after the message is normalized and before the VMI message is sent. You can modify the message in order to improve the text-to-speech (TTS) output when the VMI message is enunciated. For example, if a VMI message text contains abbreviations that result in unacceptable TTS output (for example, "Bath Emerg"), a string replacement can be configured to generate an acceptable TTS output such the fully enunciated phrase "Bath Emergency".

String replacements are configured with the `rsipmessagestringreplacement.txt` file. Entries in the file are of the format `<search string> = <replacement string>`.

```
Emerg = Emergency
```

Leading and trailing spaces are trimmed. If spaces are required in either string (search or replacement string), the string can be enclosed in double quotes (").

```
ICU = "I C U"
```

The order in which the transform replaces VMI strings is a top-down approach that is based on the order of the rules in the transform file. A top-down mechanism allows you to perform multi-layer transformations.

> **Note:** Be sure that the logic in your transform supports top-down processing.

For more information, see Vocera Messaging Interface Guide.

Modifying the String Replacement Transform

Learn how to update the RSIP Gateway Server String Replacement Transform (`rsipmessagestringreplacement.txt`) in order to map data from Rauland to Vocera systems.

To modify `rsipmessagestringreplacement.txt`:

1. On the Vocera SIP Telephony Gateway , open the `\vocera\telephony\rsip \rsipmessagestringreplacement.txt` file in a text editor.
2. Make changes to the properties according to your environment.
   See String Replacement for VMI Messages on page 19
3. Save the `rsipmessagestringreplacement.txt` file.
4. Stop the RSIP Gateway Server and start it again. In the Control Panel for RSIP Gateway Server, choose Run > Stop, and then choose Run > Start.