		I n n o v a t i o n **N e t w o r k** **A p p N o t e**
		TPP: 10321 **Date: May, 2011**
Product: ShoreTel | DuVoice		**System Version:** ShoreTel 11.1

Abstract

DuVoice DV2000 hospitality server allows ShoreTel® IP switches to be used in hospitality applications. In addition to guest and staff voice messaging, DuVoice provides an interface between the ShoreTel IP switch and the Property Management System (PMS), guest and staff controlled wake up calls, and staff administration access via a Web console.

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Overview

The DV2000 hospitality solution consists of guest messaging software, wakeup call software, PMS interface software and optional call accounting software on a 2U rack mount Windows 7 PC.

A TCPIP or serial link between the PMS server and the DuVoice hospitality server provides a variety of automated functions and features.

The ShoreTel "Hospitality Service" allows the DuVoice to change class of service on guest room extensions and add the guest name into the ShoreTel based on information received from the PMS upon check in and check out.

DuVoice also offers web server software that provides staff with access to guest administration features through "InnDesk" which is a web console.

Hospitality call accounting (Metropolis) can also be hosted on the same server with the DV2000 application.

Features and Benefits

Guest Messaging
The DV2000 system provides guest mailboxes which are easy for any guest to use. Extended stay features can also be implemented where guests can record personal greetings and set a mailbox password. Mailboxes will be reset automatically upon check out – archiving messages, removing wake up calls, turning off message lights and routing callers to the operator from a checked out room.

Staff Messaging
DuVoice recommends using the ShoreTel voice messaging for staff but the DuVoice server can be used for staff messaging as well. Messaging features for staff include enterprise class staff messaging that provides voicemail messages to a staff member's email. Note: The 3rd party voice messaging option from ShoreTel is required for the "Message" button on ShoreTel telephones to operate.

Guest Wake-up Calls
Guests can schedule their own wake up calls from their telephone via touch-tones, or they can request staff to schedule the call for them. With the easy to use InnDesk Web console, staff can set the wakeup call using any PC on the hotel network through the web console. Staff can also use a special staff Touch-tone User Interface (TUI) to set wake up calls from any telephone. The system can be configured to retry wake up calls for a preset number of attempts. In the event that all calls go unanswered, the system can generate a notification call to staff to alert them of the failed wake up call. A detailed report of wakeup call activity is available to staff. The guest is presented a friendly wake up call announcement and even has the ability to snooze the wakeup call for 10 minutes. The announcement can be recorded by hotel staff or professional studio talent.

Integration with any PMS
DuVoice supports integration with any Property Management System. There are many different vendors and protocols that support various features. While DuVoice has relationships with many PMS companies, DuVoice can appear to the PMS software as a popular hospitality PBX. This allows compatibility with any PMS vendor. Basic features such as check in, check out and room clean/dirty are supported by most PMS companies. More advanced features such as setting wake up calls through the PMS are also available on some PMS integrations.

Track Housekeeping
From a room, housekeeping staff can enter a special code using the guest room telephone to indicate that they are working in that room. Upon completion of room cleaning, staff can enter a code to indicate that the room is clean, still dirty or in need of maintenance. DuVoice can send that update information to the PMS depending on the system in use.

Easy Staff Training

The intuitive InnDesk allows for quick staff training – especially important in the hospitality industry where staff turnover is always an issue. Flash training videos at www.duvoice.com are also available to the hotel staff.

DuVoice Overview and Contact Info

DuVoice has created messaging solutions since 1990. Since the mid-1990's, DuVoice has place a special focus on providing messaging solutions to the hospitality industry. Product development, technical support and professional services combine to make DuVoice a leader in the industry.

For general sales questions, please contact your reseller or contact DuVoice directly at:

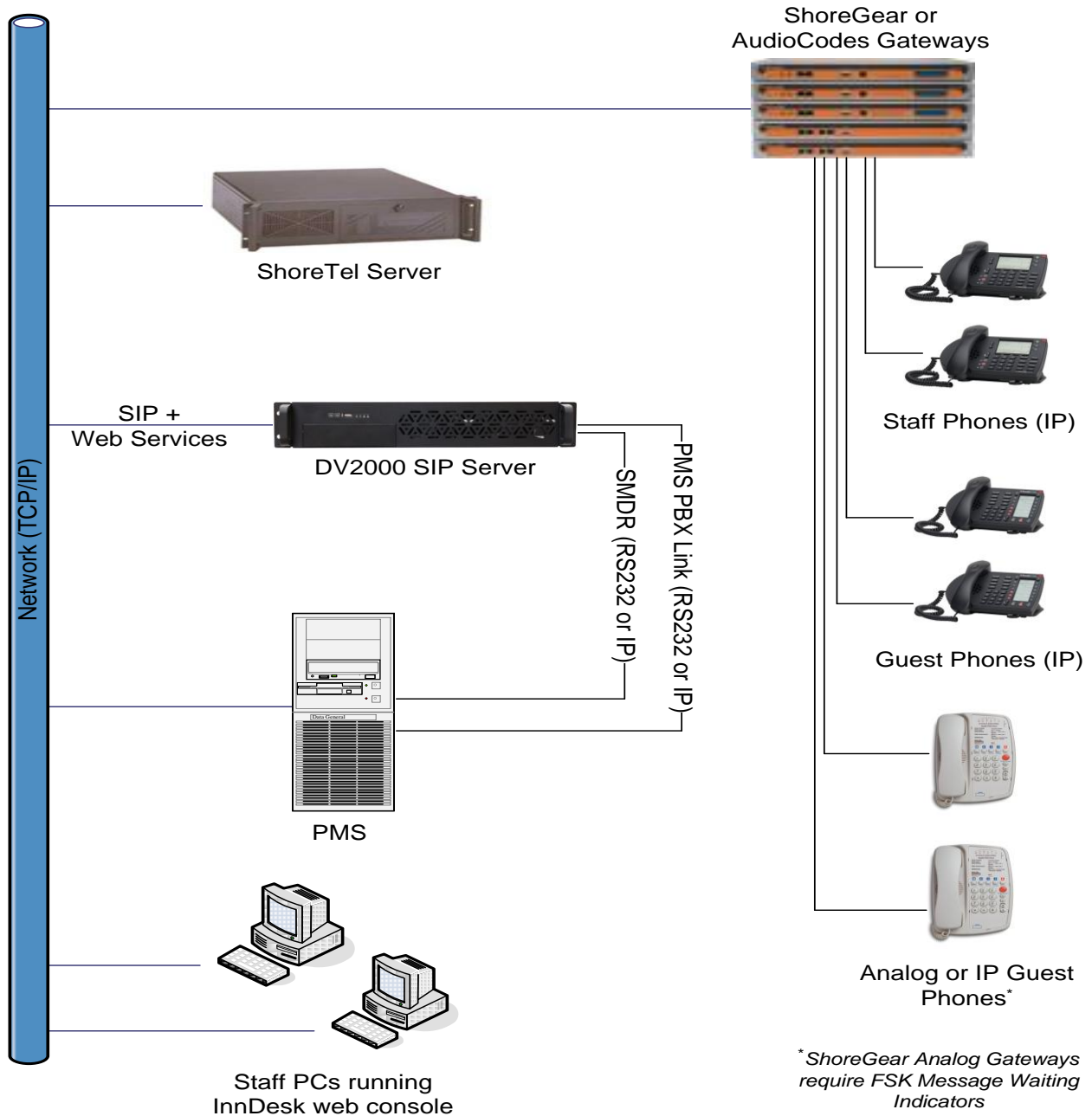| The DuVoice Sales Department	Resellers who want to start selling this solution should contact:
800.888.1057	The DuVoice Sales Department 800.888.1057,
sales@duvoice.com	sales@duvoice.com
www.duvoice.com	www.duvoice.com

DuVoice Product Information

DV2000 with the 2U rack mount chassis shown

A turnkey system from DuVoice includes a 2U rack Windows 7 PC. The DuVoice software can also run under VMWare running Hypervisor.

DuVoice Architectural Overview

ShoreGear or AudioCodes Gateways

ShoreTel Server

Network (TCP/IP)

SIP + Web Services

DV2000 SIP Server

SMDR (RS232 or IP)

PMS PBX Link (RS232 or IP)

PMS

Staff Phones (IP)

Guest Phones (IP)

Analog or IP Guest Phones*

ShoreGear Analog Gateways require FSK Message Waiting Indicators

Staff PCs running InnDesk web console

Requirements

This application requires the following:

- DV4 or DV2000 turkey server or software only (Win 7 stand alone or VMWare session)

- ShoreTel Hospitality Service on the ShoreWare Director server

- Serial or IP connection to PMS

ShoreTel

- Optional Call Accounting Software (Metropolis or SDD is recommended)

- ShoreWare External Unified Messaging SIP Link license if the DuVoice system is to be used for staff messaging.

Limitations

- Using ShoreTel analog gateways guest rooms will require analog telephones with FSK message waiting lights or IP telephones. Telematrix hospitality telephones (www.cetisgroup.com) have the FSK message waiting lights as an option. Standard hotel telephone neon or LED message waiting lamps are not supported by ShoreGear analog extensions but are supported by TTP approved Audiocodes gateways.

- Must run ShoreTel 11.1 Build 16.23.7305 (or above)

Version Support

The table below contains the matrix of DuVoice versions certified on the identified ShoreTel software releases. Products listed in the table below were certified via the Technology Partner Program certification process for the ShoreTel system.

DuVoice Version	5.00.031 or above
ShoreTel 11.1	✓

Certification Testing Results Summary

Table 1- Basic Feature Test Cases

| ID	Name	Description	Results
	Port Function		
1.1	Call each VM port in turn	Each port answered	Pass
1.2	Call each VM port in turn	Each port integrated	Pass
	Stations		
1.3	Call VM hunt group from Station	Answered into guest mailbox	Pass
1.4	Station to RNA Station	Answered with correct MB Greeting	Pass
1.5	Station to Busy Station	Answered with correct MB Greeting	Pass
	MWI		
1.6	Leave first new message in MB	MWI ON	Pass
1.7	Retrieve last new message in an MB	MWI OFF	Pass
1.8	Room Extension User Group	Use the Front Desk application to check the guest in and out, then confirm the room User Group in the ShoreTel changes upon check in and check out.	Pass
1.9	Wake Up Call Testing	Set an automatic wake up while in a room to call back in a few moments.	Pass

| ID	Name	Description	Results
1.10	Multiple wake up calls	Use InnDesk, and create an automatic wake up at a scheduled time to a range of rooms and verify multiple phones received the wake up call.	Pass
1.11	Text message notification – MWI ON	Use InnDesk, configure "Text message count" to a value greater than 0. Guest room phone notified of text message with flashing MWI.	Pass
1.12	Text message notification – MWI OFF	Guest contacts front desk for text message. Front desk sets "Text message count", using InnDesk, to a value of 0, MWI stops flashing on guest room phone.	Pass
1.13	Automatic Call Forward to voice mail – DND (Do Not Disturb)	Configure guest room phone to "DND". Place call to guest room phone, call is forwarded to voice mail.	Pass
1.14	Automatic Call Forward to voice mail – DND (Do Not Disturb) MWI ON	Configure guest room phone to "DND". Place call to guest room phone and leave voice message. Guest room phone indicates voice message received with flashing MWI	Pass
1.15	Wake up call received with DND (Do Not Disturb) enabled	Configure guest room phone to "DND". Use InnDesk, create an automatic wake up. Wake up call rings guest phone.	Pass

DuVoice Configuration Overview

These steps will guide you through configuring your system to connect with the ShoreGear SIP Proxy via SIP. For more information please see the DuVoice Manual located on the system desktop, also located in the DuVoice folder in the Start Menu or online at http://manual.duvoice.com.

Port Configuration

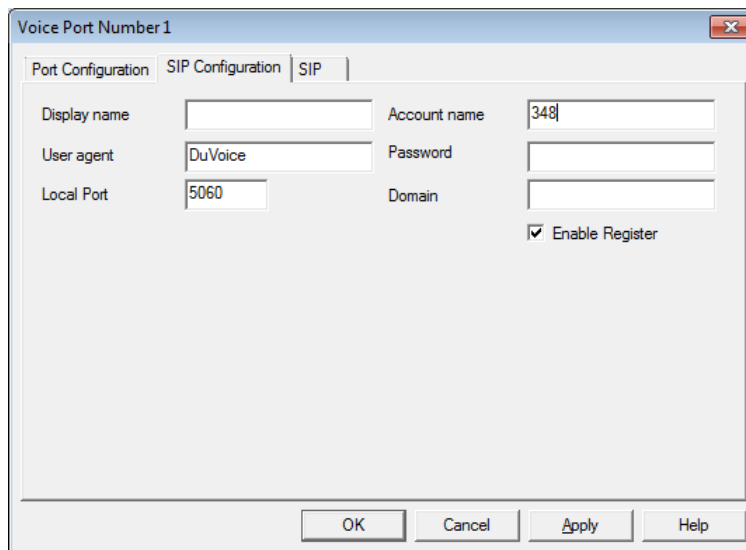Run System Configuration from the start menu located in the DuVoice folder.
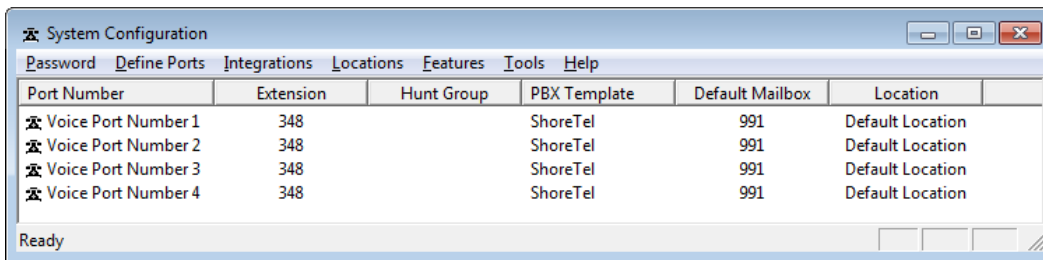
Double click Voice Port Number 1.
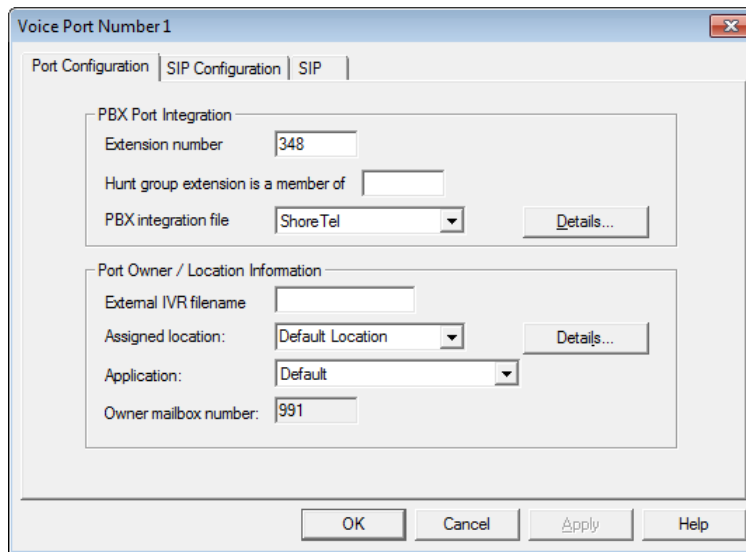
Enter the extension number associated with the DuVoice system configured in Shoreware Director under SIP Servers.

Click **SIP Configuration** tab.

    a. Enter the extension number assigned to the DuVoice system under **Account name.**
    b. Check **Enable Register**.
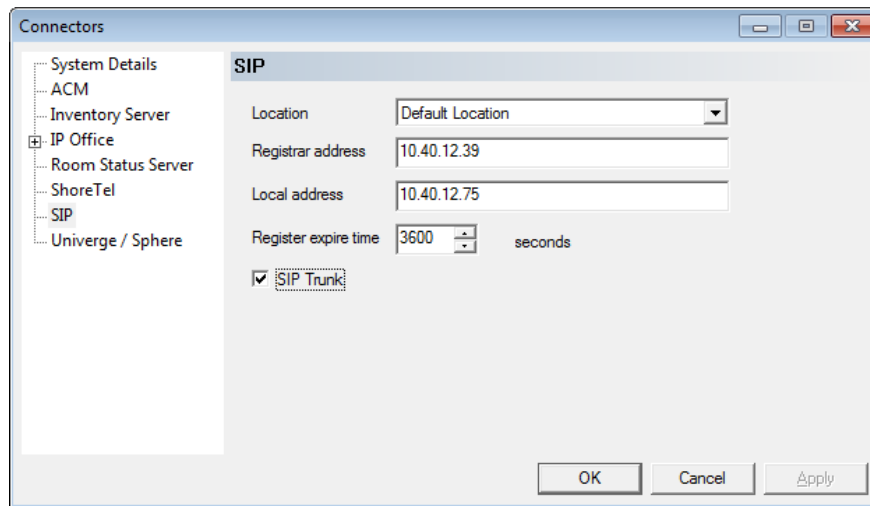   c. Leave all other fields as default.

Click **Ok** to save changes.

For all other channels enter the same extension number as port 1 and confirm **Enabled Register** is not checked.

SIP Connector
Select Features | Connectors | SIP

a. Enter the IP address of the ShoreGear SIP Proxy Switch for **Registrar address**.
b. Confirm the IP address located in the **Local Address** field is that of the network connection currently being used on the system. If the system has multiple network connections this might be different.
c. Check **SIP Trunk**.
   o **Note**: DuVoice does not connect to the ShoreGear SIP Proxy Switch as an external trunk; however this field must be checked for proper SIP registration.

Click **Ok** to save changes.

Hospitality Configuration
Select Features | Connectors | ShoreTel
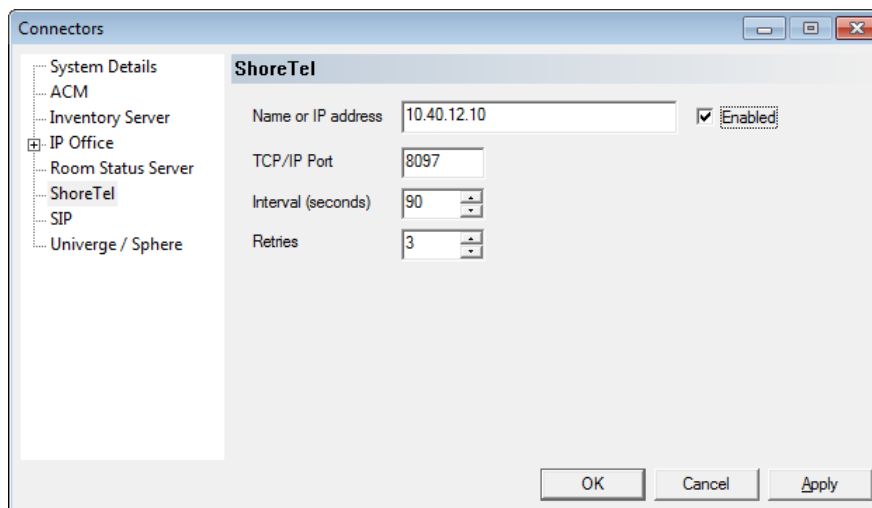
This configures the DuVoice for changing user names and User Groups via the ShoreTel Hospitality Server Interface provided by ShoreTel.
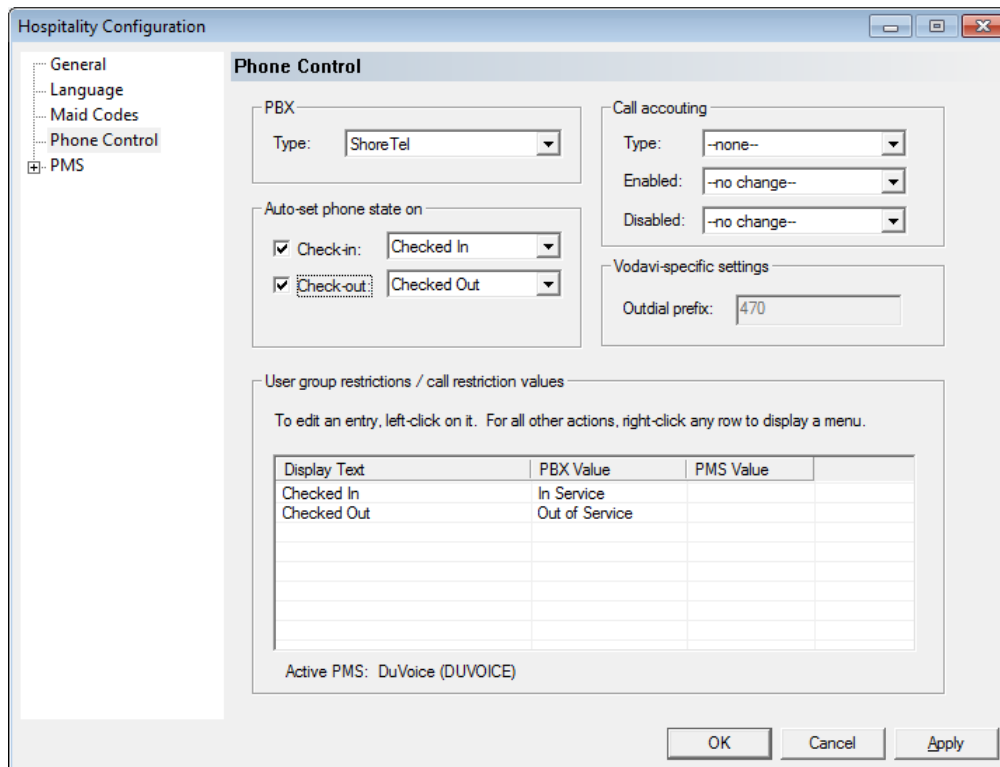
a. Enter the IP address for the ShoreTel Headquarter Server.
b. Check **Enable**.

Click **Ok** to save changes.

Choose Features | Hospitality | Phone Control

This configures the DuVoice Hospitality interface for sending changes to the ShoreTel Headquarter Server when interfacing with a Property Management System (PMS).

    a. Select **ShoreTel** for **PBX type**.
    b. Enter User Groups associated with guest rooms under User group restrictions.
        i. **Display Text** field is used for staff only.
        ii. **PBX Value** must be set to the exact case sensitive name of the User Groups configured on the ShoreTel Headquarter Server.
        iii. **PMS Value** varies depending on your installed PMS and is not covered in this document. Please see the DuVoice manual for more information.
    c. If phones should be automatically configured at check in or check out choose the appropriate groups under **Auto-set phone state on**.

ShoreTel Configuration Overview

The configuration information below shows examples for configuring ShoreTel, and DuVoice for an External Voice Mail System via SIP. Even though configuration requirements can vary from setup to setup, the information provided in these steps, along with the ShoreTel Planning and Installation Guide and documentation provided by DuVoice should prove to be sufficient. However, every design can vary and some may require more planning than others.

ShoreTel Configuration

Set up the DuVoice system as an External Voice Mail System. The DuVoice Server needs to be configured as a third-party messaging system on the ShoreTel system as a SIP Unified Messaging Server.

Install the ShoreTel Hospitality Service on the ShoreWare Director server to allow DuVoice systems to change the guest name and User Group on their ShoreTel system.

Create two user groups for the hotel room phones, In Service and Out of Service, and set the restrictions accordingly.

Use the settings outlined in the screen shots below.

ShoreTel Hospitality Service

An available ShoreTel designed service installed on the ShoreWare Director server which enables the DuVoice system to change the name and User Group associated with a guest room phone when guests check in/out.

· Changing the name insures hotel staff phones display the guest's name on the phone's display.
· Changing the User Group enables control of the calling permissions for each room (e.g. reducing call permissions for unoccupied rooms, increasing them at check in).

The ShoreTel Hospitality Service enables these functions but requires a compatible DuVoice system to initiate the changes.

ShoreTel Professional Services has created the Hospitality Service solution to allow external property management systems to initiate user name and User Group changes on their ShoreTel system. This can ensure, for example, when a hotel guest checks into a room, the guest's name will appear on their ShoreTel room phone and the User Group of the phone will be changed to allow the desired calling access (i.e. to make external long distance calls). When a guest checks out, the name on the phone can be reset to a generic name (e.g. "Room 234") and the User Group can be reset to "house phone" access.

The Hospitality Service is a Windows install package consisting of STHospitalitySetup.exe and STHospitalitySetup.msi files. Copy both these files to a permanent location anywhere on the ShoreWare Director server and execute STHospitalitySetup.exe, accepting all defaults.

The default install location is "C:\Program Files\ShoreTel\Hospitality Service". The service itself will appear in the Windows Services Control Panel under the name "STPS Hospitality Service". This service must be running for the Hospitality Service to perform its function. It should begin running automatically upon install and upon server startup (e.g. after a reboot).

The Hospitality Service can function only when installed on the ShoreWare Director server.

Requests to change the name and/or User Group of a ShoreTel user must be initiated by an external automated system such as a property management system. The ShoreTel Hospitality Service will not take any action without such external stimulus.

Order the ShoreTel Hospitality Service from ShoreTel using SKU 93080 "Professional Services Custom Software".

ShoreTel System Settings – General

The first settings to address within the ShoreTel system are the general system settings. These configurations include the Call Control, SIP Servers, the Switch Settings and the Site Settings.
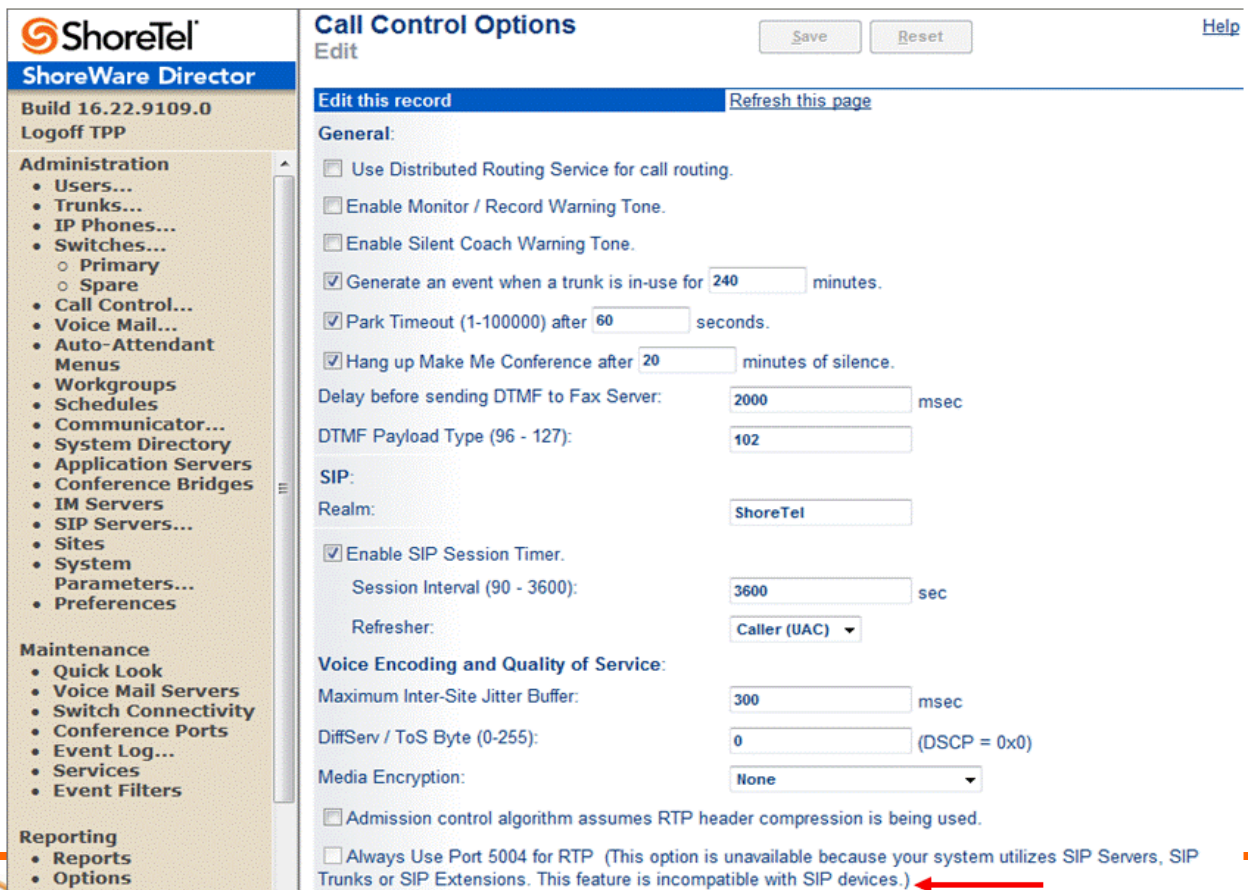
Call Control Settings:

The first settings to configure within ShoreWare® Director are the Call Control Options. To configure these settings for the ShoreTel system, log into ShoreWare Director and select "Administration" then "Call Control" followed by "Options" (**Figure 4**).
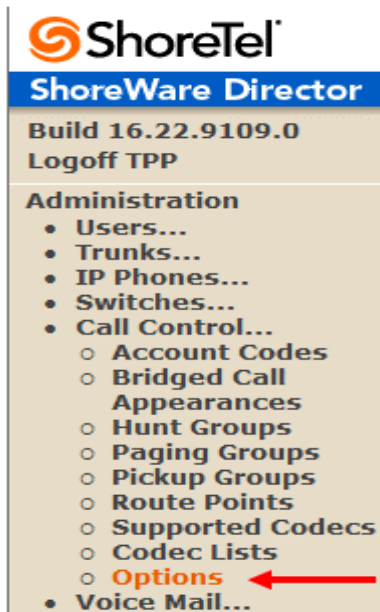
Figure 4 –Administration Call Control/Options

The "Call Control/Options" screen will then appear (**Figure 5**).

Figure 5 – Call Control/Options

Disabling the parameter "Always Use Port 5004 for RTP" is required for implementing SIP on the ShoreTel system. For SIP configurations, Dynamic User Datagram Protocol (UDP) must be used for RTP Traffic. If the parameter is disabled, Media Gateway Control Protocol (MGCP) will no longer use UDP port 5004; MGCP and SIP traffic will use dynamic UDP ports. Once this parameter is disabled (unchecked), make sure that "everything" (IP Phones, ShoreGear® Switches, ShoreWare Server, Distributed Voice Mail Servers / Remote Servers, Conference Bridges and Contact Centers) is "fully" rebooted – this is a "one time only" item. By not performing a full system reboot, one-way audio will probably occur during initial testing.

NOTE: As of ShoreTel Release 8, the parameter "Always Use Port 5004" is disabled (unchecked) on new installations. The parameter "Always Use Port 5004" will appear if an upgrade to ShoreTel Release 8 (and above) from a previous release lower than ShoreTel Release 8 was performed.

SIP Profiles:

Within ShoreWare® Director are the SIP Profiles. To configure these settings for the ShoreTel system, log into ShoreWare Director and select "Administration" then "SIP Servers..." followed by "SIP Profiles". Select the "New..." button to create a new SIP Profile (**Figure 6**).
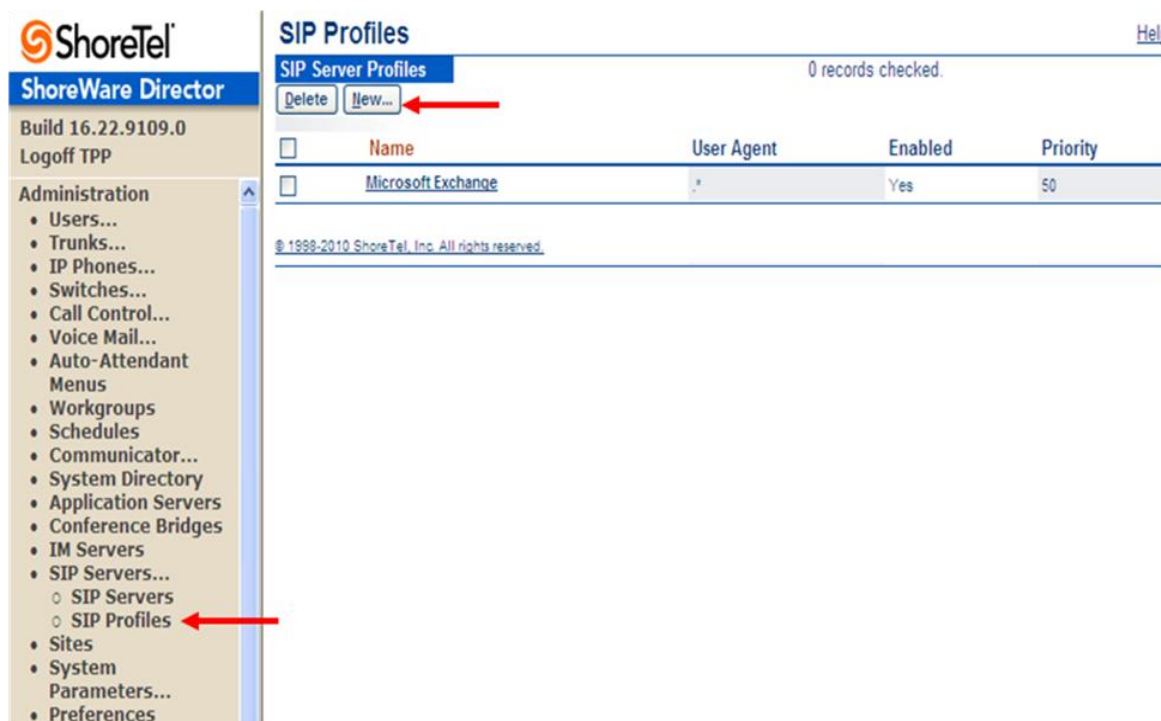
Figure 6 – SIP Profiles

A new SIP Profile screen is displayed (**Figure 7**).

Figure 7 – Edit SIP Server Profile

Enter the SIP Server Profile information to create a new SIP Profile.

    a. **Name**: This parameter is the label by which Director refers to the profile

    b. **User Agent**: This parameter is the expression ShoreWare uses to identify devices covered by the profile, it is not used by the SIP servers. The profile cannot be saved without a value, so you should define it as '**.***' (without the single quotes, should just be period followed by the asterisk).

    c. **Priority**: This parameter lists the status of the profile. The default is 100 and there is no need to modify this parameter.

    d. **Enabled**: This check-box controls whether the profile is available for use. The default is not enabled (not checked) be sure to enable / check this option

    e. **System Parameters**: This field lists the device characteristics and default settings.

    f. **Custom Parameters**: The contents of this field list additional device settings or overwrite default settings listed in the System Parameters field. Make sure to include the following entries in the Custom Parameters (note these are case sensitive):

        i. **AddrSupport=diversion**

        ii. **acceptMWI=notify**

    g. Click **_Save_** to store your changes

Note: Please do not disable any of the default SIP Profiles. In case there are issues with the custom profile defined, disabling the system profiles may cause DuVoice to not be added to the ShoreTel system. Refer to the ShoreTel Administration Guide for more information.

SIP Servers:

Within ShoreWare® Director are the SIP Servers. To configure these settings for the ShoreTel system, log into ShoreWare Director and select "Administration" then "SIP Servers..." followed by "SIP Servers". Select the "New..." button to create a new SIP Server (**Figure 8**).
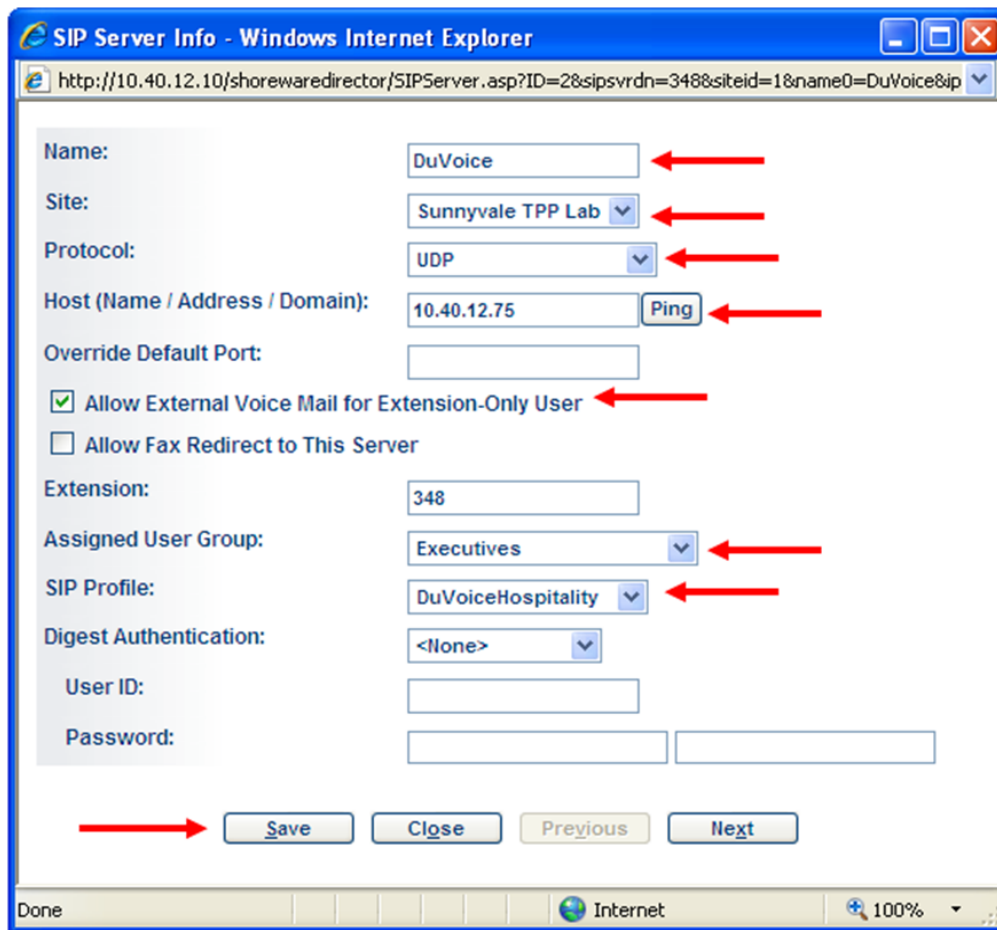

Figure 8 – Edit SIP Server Profile

A new SIP Server screen is displayed (**Figure 9**).

Figure 9 – SIP Server New Screen

Enter the SIP Server information to create a new **SIP Server**. Once the parameters are populated, click "**Save**" to store your changes.

Table 6 displays the SIP Server configuration fields and descriptions.

Field	Description
Name:	Enter an appropriate descriptive server name
Site:	Select the appropriate site location
Protocol:	Select UDP
Host (Name/Address/Domain):	Enter the IP address of the DuVoice server
Override Default Port:	Leave blank

Allow External Voice Mail for Extension-Only User	Check this parameter (see Note below)
Allow Fax Redirect to This Server	Leave blank
Extension:	The system will automatically assign the next available extension, however you can define a different unused extension.
Assigned User Group:	Assign an appropriate user group that has access to the necessary trunks, in this example we selected the "Executives" user group.
SIP Profile:	Enter the SIP profile created in previous step, see **Figure 7**.
Digest Authentication:	Leave this as <None>
User ID:	Leave blank
Password:	Leave blank

Table 6 - SIP Server Info Requirements

NOTE: Checking the "Allow External Voice Mail for Extension-Only User" option will require the ShoreWare External Unified Messaging SIP Link license from ShoreTel.

Switch Settings - Allocating SIP Proxy Ports

When allocating SIP Proxy Ports, the changes are modified by selecting "Administration," "Switches" then "Primary" in ShoreWare Director (**Figure 10**)

Figure 10 –Administration Switches

List of Primary Switches

This action brings up the "Primary Switches" screen. From the "Switches" screen, simply select the name of the switch to configure. The "Edit ShoreGear …Switch" screen will be displayed (see Figure 11). Within the "Edit ShoreGear …Switch" screen, define one of the "Port Type" settings from the available ports to "100 SIP Proxy" , then save the change.

Figure 11 – Edit ShoreGear Switch

If the ShoreGear switch that you have selected has "built-in" capacity (i.e., ShoreGear 50/90/220T1/E1, etc.) for IP phones and SIP trunks, you can also remove 5 ports from the total number available to provide the "100 SIP Proxy" configuration necessary.

Note: Every 5 ports you remove from the total available will result in "100 SIP Proxy" ports being made available.

One dedicated ShoreGear 120 switch can act as a proxy for the entire site and support up to 2400 SIP phones.

Site Settings

The next settings to address are the administration of sites. These settings are modified under the ShoreWare Director by selecting "Administration" then "Sites" (**Figure 12**).
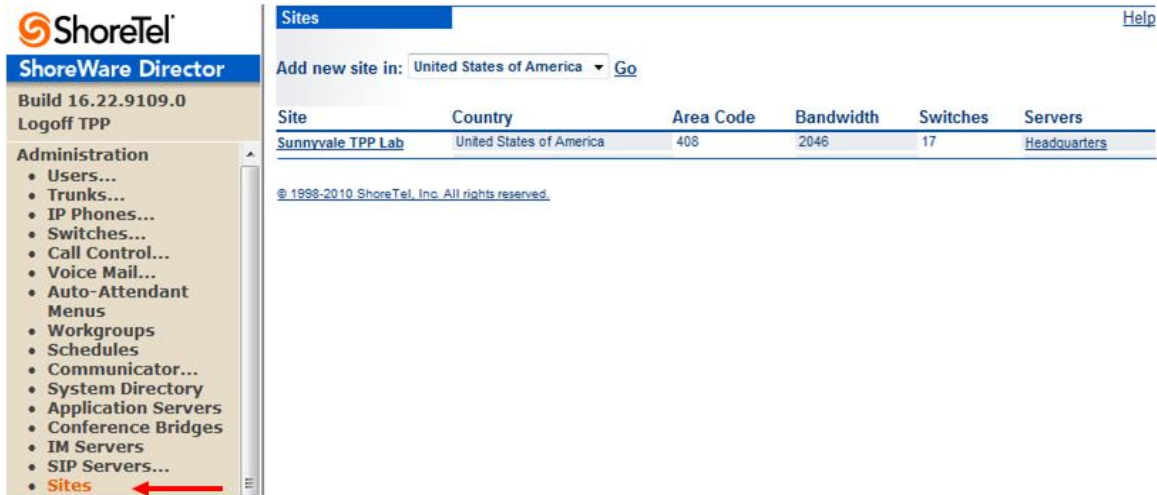
Figure 12 – Administration/Sites

This selection brings up the "Sites" screen. Within the "Sites" screen, select the name of the site to configure. The "Edit Site" screen will then appear. Scroll down to the "SIP Proxy" parameters (**Figure 13**).
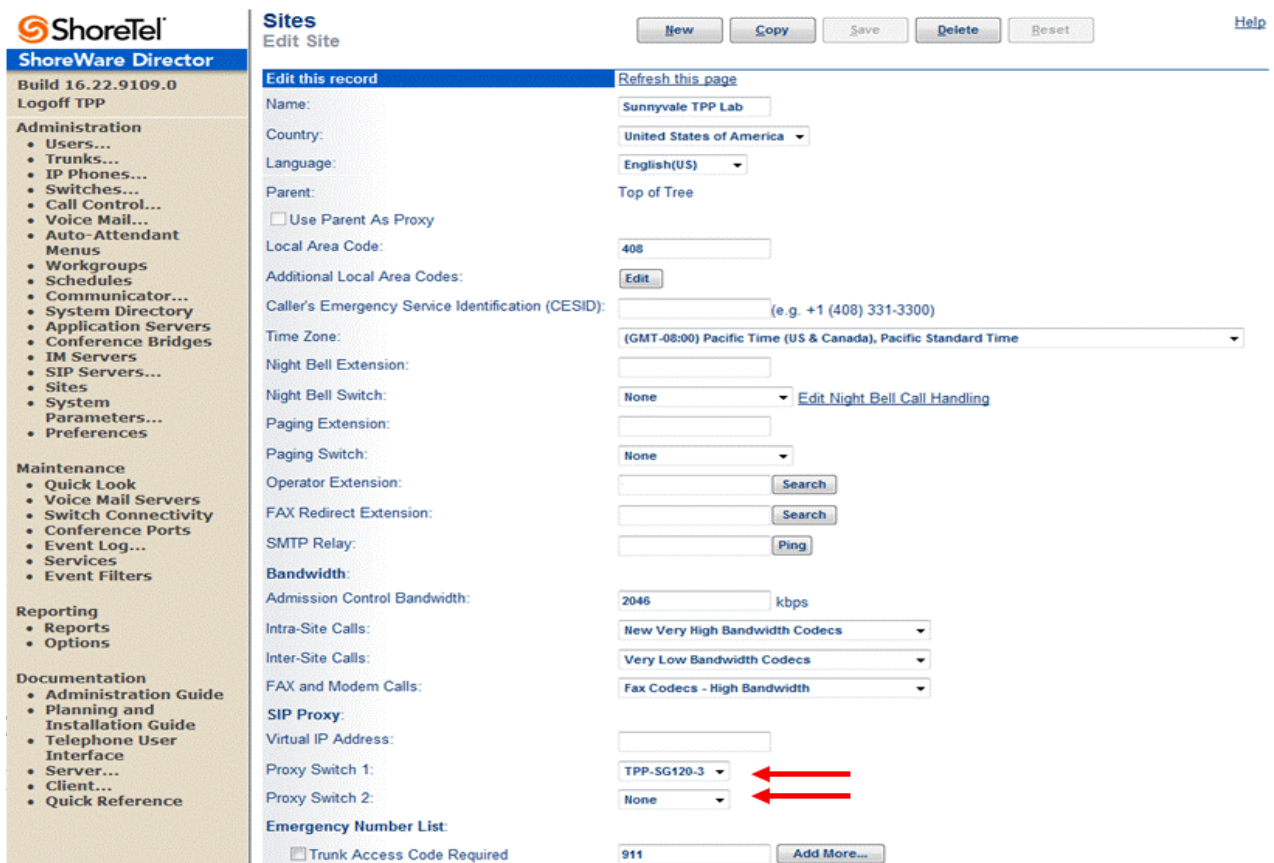
Two ShoreGear switches can be configured as SIP proxy servers for redundancy and reliability purposes.

The "Virtual IP Address" parameter is a new configuration parameter beginning with ShoreTel 8. This "Virtual IP Address" is an IP address that can be moved to a different switch during a failure. For each site that supports SIP extensions, one "Virtual IP Address" is defined that will act as the SIP Proxy for the site. This IP address must be unique and static.

The ShoreTel server will assign this "Virtual IP Address" to the ShoreGear that is configured as SIP proxy for the site. Two ShoreGear switches can be configured as SIP proxy servers for redundancy and reliability purposes. If the primary proxy server goes down, the other proxy switch will take over the "Virtual IP Address." Due to this "Virtual IP Address" mechanism, SIP phones will not know if the proxy switch goes off-line.

Note: If you choose not to define a "Virtual IP Address," you can only define one proxy switch, and there will be no redundancy or failover capabilities. The switches available in the "Proxy Switch 1 / 2" will only be shown if proxy resources have been enabled on the switch.

User Groups

Within ShoreWare Director, select "Administration", then "Users..." followed by "User Groups". In the "User Groups" screen select "Add new". This action brings up the "Edit User Group" screen (**Figure 14**).

Users

Figure 15 – Adding/Editing Users

Define the "First Name" and "Last Name" as you deem appropriate. ShoreWare Director will auto-assign the next available "Number" (i.e., extension), but you can modify it to any available extension. Define the "License Type" as "Extension-Only". Define the proper "User Group" and set "External Mailbox through Server" to the name of your DuVoice SIP Server (created in **Figure 9**)

Note: If you configured the "License Type" for "Extension-Only," you cannot select "Any IP Phone" but instead must set the "Home Port" for the "SoftSwitch" selection. Save your changes

This completes the settings for the ShoreTel System.

DuVoice Troubleshooting

The following tests should be performed after installation.

Integration Testing
    Port Function

Call each VM port in turn	Each port answered
Call each VM port in turn	Each port integrated

Stations

Call VM hunt group from Station	Answered into guest mailbox
Station to RNA Station	Answered with correct MB Greeting
Station to Busy Station	Answered with correct MB Greeting
Trunk to Busy Station	Answered with correct MB Greeting
Trunk to RNA Station	Answered with correct MB Greeting

MWI

Leave first new message in MB	MWI ON
Retrieve last new message in a MB	MWI OFF

Property Management Interface Testing

Confirm that PMS Interface application is correctly receiving data from the PMS system. Use the FrontDesk application to verify the status of the guest room upon check in and check out. Also confirm that the room User Group in the ShoreTel changes upon check in and check out.

Wake Up Call Testing

Set a automatic wake up while in a room to call back in a few moments.

Call Accounting Testing

When call accounting software is installed on system, you will need to confirm that the Station Message Detail Report (SMDR) is being received and sorted correctly.

DuVoice Technical Support

DuVoice technical support can be reached by calling 425-250-2393 or emailing support@duvoice.com. Normal support hours are from 7:00 AM to 6:00 PM Monday through Friday Pacific time. Leaving a voice mail message after hours will page a technician who will return the call. Please have the system key number available when calling technical support. This number can be found on the software dongle which will be connected to a parallel printer port or USB port on the DuVoice server.

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Trademarks

Disclaimer

ShoreTel tests and validates the interoperability of the Member's solution with ShoreTel's published software interfaces. ShoreTel does not test, nor vouch for the Member's development and/or quality assurance process, nor the overall feature functionality of the Member's solution(s). ShoreTel does not test the Member's solution under load or assess the scalability of the Member's solution. It is the responsibility of the Member to ensure their solution is current with ShoreTel's published interfaces.

The ShoreTel Technical Support organization will provide Customers with support of ShoreTel's published software interfaces. This does not imply any support for the Member's solution directly. Customers or reseller partners will need to work directly with the Member to obtain support for their solution.

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