

MiCollab Advanced Messaging ShoreTel ShoreGear SIP Trunk Integration Technical Note

For version 9.0 and above

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Preface

This Integration Technical Note (ITN) is written for technicians who are experienced with MiCollab Advanced Messaging (MiCollab AM) and are familiar with its procedures and terminology. This document also assumes that you are familiar with the features and programming of the ShoreTel ShoreGear telephone system.

This document describes how to integrate MiCollab AM with the ShoreTel ShoreGear PBX telephone system, using the Session Initiation Protocol (SIP) integration.

The ShoreTel ShoreGear SIP integration consists of the ShoreGear PBX and MiCollab AM. This integration operates exclusively over an IP-based network; it uses no analog or digital voice telephony ports, but passes voice communication and signaling information over a static network connection between the ShoreGear PBX and MiCollab AM.

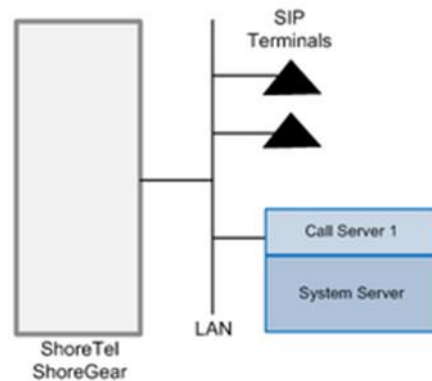


Figure 1. Diagram of ShoreTel ShoreGear system integration

All calls for MiCollab AM are routed to the hunt group pilot number through the ShoreTel SIP Server interface. MiCollab AM performs the call hunting. Similarly, MiCollab AM routes all outgoing calls and MWI requests through the SIP Server interface.

This document describes the procedure for setting up the ShoreTel ShoreGear integration between MiCollab AM and a ShoreTel ShoreGear telephone system. The process consists of programming the ShoreTel ShoreGear PBX telephone system, installing MiCollab AM software and configuring MiCollab AM.

Critical application considerations are documented, as well as installation and programming procedures necessary to integrate MiCollab AM with the ShoreTel ShoreGear PBX, referred to throughout this document as ShoreGear.

Use this document in conjunction with the *System Installation and Configuration Guide*, the *System Administration Guide*, and the MiCollab AM online help system.

References

A catalog of technical documentation is included on the MiCollab AM Installation Media. If you are installing any advanced applications, such as Networking and Fax Server applications, you should refer to the appropriate technical documentation for application and installation information.

Documentation

The technical documentation is produced in the PDF format and requires the PDF reader to view it. The documentation set for this MiCollab AM includes the following documents and resources:

- **Developer Resources.** Contains programming guides and API references for developers for integrating the server clients and web applications with MiCollab AM.
- **Integration Technical Notes (ITN).** Contains a set of guides that describe the integration methods and instructions for a variety of phone systems to work with MiCollab AM. The ITNs are generally used by resellers or administrators who are experienced with MiCollab AM and familiar with the integration procedures and terminology.
- **Quick Reference Card (QRC).** Contains shortcuts and quick instructions telling subscribers how to access and use the messaging system.
- **Server Documentation.** Available as a PDF only. Contains administrative guides for administrators about installing, configuring, and administering the messaging system, and user guides for subscribers about accessing the messaging system and checking and sending messages.
- **Spare Parts Documentation.** Contains a set of guides that describe the instructions for installing and configuring hardware parts to work with MiCollab AM. These documents are written for Mitel certified MiCollab AM technicians who are experienced with MiCollab AM and familiar with the procedures and terminology.
- **Software Release Notice (SRN).** This notice introduces the new features, capabilities, and hardware/software requirements for the corresponding MiCollab AM version.

Documentation Updates

Documentation updates may be available from the following sources:

- Mitel certified technicians can view or download the latest/updated documents and program files from our partner web site: connect.mitel.com/connect

Help

The primary source of information about MiCollab AM is the online help available within any of its administrative utilities. You can access **Help** as follows:

- Click the **Help** button in the dialog box or window in which you are working
- Press the **F1** key at any time.

Document Conventions

The following conventions are used in this document:

- **Key Names.** Names of keys on the keyboard are shown in a box.

Example: **Enter**

When two keys must be pressed simultaneously, they are joined by a + sign.

Example: **Alt** + **Tab**

- **Reference to Document.** *Italics* fonts can also signify the titles of other documents.

Example: See the *System Installation and Configuration Guide*.

- **UI Element Names.** Names of UI elements such as dialog windows, screens, menu items, tabs, buttons, icons, etc. are shown in bold.

Example: On the **Startup** screen, click the **Start** icon.

- **User Input.** Information required to be typed is shown in italics.

Example: Type the password *voicemail*.

- **Warning, Caution, Important, and Notes.** Text for the contents that require attention are shown as follows:

WARNING A warning paragraph advises you of circumstances that can result in the loss of data, harm to the system server platform, or personal harm.

CAUTION Failure to follow these recommendations can result in unauthorized access to the system and consequent loss of data.

IMPORTANT An important paragraph gives decision-making information or informs you of the order in which tasks need to be completed.

NOTE A note gives additional information, provides an explanation, or indicates an exception to the information in the preceding text.

Features Supported by this Integration

The following tables list the features supported using the ShoreTel ShoreGear SIP integration.

Table 1. Call forward to personal greeting support for these common call types

Divert to MiCollab AM on	Supported
No Answer	Yes
Busy	Yes
Forward All	Yes - Limited Support – Note
Do Not Disturb	Yes (as FW All) – Note

NOTES

The ShoreTel ShoreGear does not allow loop-back calls on the SIP Server interface. This limitation may cause the following issues where a subscriber's extension is set to unconditionally forward to MiCollab AM:

- a. If MiCollab AM initiates a consultation call or an IMN (Immediate Message Notification) callout, the extension will ring and the call does not forward immediately. The Ring No Answer (RNA) timeout will ensure that the call is eventually pulled back. The subscriber may press the *Send to Voicemail* key on the phone to forward the call to MiCollab AM immediately.
- b. If MiCollab AM performs a supervised call transfer to a subscriber with call screening enabled, then the extension will ring and the call will not forward. If the *Send to Voicemail* key is pressed instead of letting the call be pulled back on timeout, the subscriber may receive an additional voice message containing an audio prompt asking the subscriber to accept or reject the call.

Table 2. Integration supported features for ShoreTel ShoreGear SIP Trunk

Feature	Supported	Notes
Automatic subscriber logon	Yes	
ANI/CLI/DNIS	Yes	
Announce Busy greeting on forwarded calls	Yes	
Call screening	Yes	Note 1, Note 2
Caller queuing	Yes	Note 1
End-to-end DTMF, from trunks	Yes	
End-to-end DTMF, proprietary telephones	Yes	
Fax Tone Detection	Yes	
Internal calling party ID for reply	Yes	
Live record, integrated	No	

Live reply to sender	Yes	
Message notification callouts	Yes	
MWI, set/clear	Yes	
MWI, inband/outband	Outband	
PBX-provided disconnect signaling	Yes	
SRTP	No	Note 4
TLS	No	Note 4
Transfers, blind	Yes	
Transfers, confirmed	Yes	
Transfers, fully supervised	Yes	Note 3
Transfers, monitored	No	
Trunk ID for call routing	No	
Multiple Integrations	Yes	Note 5
Automatic subscriber logon	Yes	
ANI/CLI/DNIS	Yes	

NOTES

1. Available only when using supervised transfers.
2. The Call Screening feature is not supported in cases where the end point proprietary phone will perform a *Send to Voicemail* action on a call that is made through the voicemail system. Subscribers that want to use the confirm feature must not manually redirect the call using phone's feature keys if the call originated from the voicemail system (no loop back calls are allowed if Call Screening feature is enabled). In the case a user uses the *Send to Voicemail* phone feature key and has Call Screening enabled, then the user might also receive a voice message containing the confirmation prompt. The caller will still be allowed to leave a message
3. Because of a ShoreTel limitation, If calling through the voicemail system and requesting a supervised transfer to a Forward All phone, the phone will ring instead of getting immediately to the subscriber's greeting. However, the voicemail's Ring No Answer timeout will assure that the caller will eventually hear the subscriber's greeting. The user can also chose to redirect the call to the voicemail system (before this timeout) by using the *Send to Voicemail* feature key button on ShoreTel proprietary phones.

4. MiCollab AM supports negotiation for SRTP media streams using the Secure RTP profile defined in RFC 3711 with the offer/answer model defined in RFC 3264. To enable SRTP, RTP, or both, see integration configuration options documentation for the switch. The default setting is RTP. Please note that MiCollab AM doesn't support RFC 5939 which is an extension of RFC 3264. Also, please note that SRTP has not been qualified for this integration, and no switch programming is available for setting up SRTP on the switch side. However SRTP may be enabled as described above, and technical support will be available on a best effort basis.
5. See [Critical Application Considerations](#).

Critical Application Considerations

Known limitations or conditions within the telephone system and MiCollab AM that affect the integration performance are listed here. General recommendations are provided when ways to avoid these limitations exist.

- On a MiCollab AM server with two or more NICs, the NIC that supports this integration must not occupy first place in the operating system's binding order. The primary (public) network interface card (NIC) must be the first network connection in the network binding order. MiCollab AM binds and communicates to other servers and subscribers on this network connection. For more information, refer to [Changing the Network Binding Order on the MiCollab AM Platform](#).
- MiCollab AM supports G.729a with support for annex b on the incoming audio stream only. MiCollab AM does not transmit annex b packets.
- When codec negotiation takes place between MiCollab AM and the PBX, MiCollab AM always offers the G.729a audio format as an option. You may configure G.729a as the preferred codec in MiCollab AM; however, the decision whether to use G.729a is always made by the PBX.
- The **Incoming Hunt Mode** must be configured in the **Switch Section Options** dialog box. This integration only supports terminal, circular, reverse terminal and reverse circular hunt modes. The default mode is Terminal.
- The ShoreGear SIP integration cannot route calls to multiple Call Servers. This integration supports one Call Server only. However, calls can be routed to multiple call servers using the Mitel SIP Routing Manager.
- Each ShoreGear switch supports 24 simultaneous calls through its SIP Server interface. For sites with multiple ShoreGear switches, this limit increases by 24 for every additional ShoreGear switch.
- Monitored transfers are not supported on the ShoreGear PBX.
- The ShoreTel ShoreGear does not allow loop-back calls on the SIP Server interface. This limitation may cause the following issues where a subscriber's extension is set to unconditionally forward to MiCollab AM:
 - If MiCollab AM initiates a consultation call or an IMN (Immediate Message Notification) callout, the extension will ring and the call does not forward immediately. The Ring No Answer (RNA) timeout will ensure that the call is eventually pulled back. The subscriber may press the *Send to Voicemail* key on the phone to forward the call to MiCollab AM immediately.
 - If MiCollab AM performs a supervised call transfer to a subscriber with call screening enabled, then the extension will ring and the call will not forward as. If the *Send to Voicemail* key is pressed instead of letting the call be pulled back on timeout, the subscriber may receive an additional voice message containing an audio prompt asking the subscriber to accept or reject the call.
- In order for voicemail initiated Live Record to work, enough separate Conference ports must be configured on a ShoreTel Gateway (such as a SG-40) so that VM SIP channels can be conferenced in.

The call must then be conferenced in using the *Join* feature on the subscriber's phone. If this feature is desired, please see ShoreTel documentation on how to program Conference trunks.

- 3-way conferencing with the voicemail SIP trunk is not allowed. Because of this, voicemail Live Record will not work. Conferencing works only when telephones are used.
- MiCollab AM 9.0 supports up to 10 integration types (i.e., licensed integrations) in total per system. However, the following limitations apply to each Call Server:
 - Limited to 3 integration types per Call Server
 - The 3 integration types can be any mix of TDM and SIP (e.g., 1 TDM and 2 SIP)
 - Limited to 1 Cisco UCM SCCP IP integration. Can be mixed with TDM, but not with SIP.
 - Connect up to 10 telephone systems total per Call Server (e.g., 2 Avaya Communication Manager systems using SIP + 5 Avaya IP Office systems using SIP + 3 Siemens HiPath 4000 systems using Station Set Emulation)
 - SIP timers for Aastra EETS integrations are incompatible with other SIP integrations. Thus, it is not possible to have an EETS integration with any other SIP integration on the Call Server.
- The MiCollab AM **Integration Options** parameter, **Validate Remote Hosts for Media** validates each incoming audio packet and accepts it only if it is sent from a valid endpoint. The parameter is disabled by default. Enabling this parameter causes MiCollab AM to reject RTP packets from invalid endpoints, rejects MWI packets that timeout after a specified number of times, and overcomes port lockups when callers hang up while MiCollab AM is performing a blind transfer.

IMPORTANT Enabling this parameter causes processing overhead and should only be enabled when necessary.

Installation Requirements

Review the following information before performing any of the procedures in this document. To install this integration successfully, you must meet the installation requirements for both the telephone system and MiCollab AM.

Telephone System Requirements

- ShoreTel ShoreWare version 14.2 or prior supported versions
- One ShoreWare External Unified Messaging SIP Link license

MiCollab AM Requirements

- MiCollab AM version 9.0
- MiCollab AM software key diskette or feature file with the ShoreTel ShoreGear SIP integration enabled and one Virtual SIP and RTP license enabled for each port involved in the integration
- One or two 10 MB, 100 MB, or 1000 MB (gigabit) network interface cards with cables. A separate NIC is required for this integration.

Programming the Telephone System

Follow the recommendations and programming examples in this section to program the telephone system for integration with MiCollab AM. Programming examples show commands and parameters that are necessary for integration; they do not represent PBX programming in its entirety.

The installing technician should be familiar with programming the ShoreGear system. For detailed information on programming and installing the telephone system, refer to the *ShoreTel ShoreGear PBX programming guide* and online help. Programming is performed through the ShoreTel ShoreWare Director program.

Creating a Virtual IP Address (VIP) for SIP Proxy Redundancy

Creating a Virtual IP address (VIP) for SIP proxy redundancy is an optional step that improves resiliency for sites with two ShoreGear switches. MiCollab AM communicates with the PBX system through the VIP address. The VIP is accessible to MiCollab AM as long as at least one of the two ShoreGear switches configured with this VIP remains in service.

In addition, you can use the VIP at sites with a single ShoreGear switch. Creating a virtual IP address on a single ShoreGear switch keeps the configuration steps uniform and, if additional ShoreGear switches are installed later, no additional configuration changes to MiCollab AM are required.

NOTE Assigning SIP proxy resources is required to create a Virtual IP address (VIP) only. It is an optional procedure; it does not have any effect on the integration between ShoreTel and MiCollab AM.

To create a Virtual IP address and assign it to the ShoreGear switch:

- 1 In ShoreWare Director, go to **Administration > Platform Hardware > Voice Switches/Service Appliances**, and then click **Primary**.
- 2 Select a ShoreGear switch to assign a Virtual IP Address.

ShoreTel
ShoreWare Director
Build 17.8.5718.0
Logoff Administrator

Administration

- Users...
- Trunks...
- IP Phones...
- Platform Hardware...
 - Voice Switches / Service Appliances...
 - Primary
 - Spare
 - Conference Bridges
- Call Control...
- Voice Mail...
- Auto-Attendant Menus
- Workgroups
- Schedules
- Communicator...
- System Directory
- Application Servers...
- SIP Servers...
- Sites
- System Parameters...
- Preferences

Maintenance

- Quick Look
- Connectivity
- Voice Mail Servers
- Make Me Conferencing
- Audio / Web Conferencing
- IM
- Event Filters
- HQ Event Log...
- HQ Services

Reporting

Voice Switches
Edit ShoreGear 220T1 Switch

[New](#) [Copy](#) [Save](#) [Delete](#) [Reset](#)

[Refresh this page](#)

Name: SG-220T1

Description:

Site: Headquarters

IP Address: 172.16.30.20 [Find Switches](#)

Ethernet Address: 00-10-49-0E-59-C4

Server to Manage Switch: Headquarters

Caller's Emergency Service Identification (CESID): (e.g. +1 (408) 331-3300)

Built-in Capacity: IP Phone + SIP Trunk = Total
50 + 49 = 99 of 100 (20 SIP proxy ports)

☐ Music On Hold Source

Music On Hold Gain (-49 to 13): dB

Layer 3:

Protocol Type: ISO QSIG Master

Central Office Type: ESS

Call by Call Service: <None>

☐ Enable Outbound Calling Name

Layer 1:

Clock Source: Master

Framing Format: ESF

Line Code: B8ZS

The sample image above displays the SIP proxy ports assignment (see the Built-in Capacity field) on the ShoreGear-220T1. The following sample image displays the SIP proxy ports assignment on ShoreGear-40.

Port	Port Type	Trunk Group	Description	Jack Number
1	5 IP Phones		P01	
2	100 SIP Proxy		P02	
3	5 SIP Trunks		P03	

NOTE Please refer to the appropriate ShoreTel administration guide to configure other ShoreGear switch models.

- In ShoreWare Director, select **Administration**, and then select **Sites**.
- Select a site to assign a Virtual IP Address.
- In the SIP Proxy section, enter an IP address, and then assign the ShoreGear switches to the Virtual IP Address by selecting them from the drop-down list in the Proxy Switch 1 and 2 fields.

SIP Proxy:

Virtual IP Address: 172.16.30.25

Proxy Switch 1: SG-220T1

Proxy Switch 2: SG-40

- Click **Save**.

Creating a SIP Profile for MiCollab AM

Create a SIP Profile for the voicemail integration.

To create a SIP Profile for MiCollab AM:

- 1 Using the ShoreWare Director program, go to **Administration > SIP Servers > SIP Profiles**, and then click **New**.

The screenshot shows the ShoreWare Director web interface in a Windows Internet Explorer browser window. The address bar shows <http://localhost/ShoreWareDirector/IV>. The page title is "SIP Profile" and the subtitle is "Edit SIP Server Profile". There are buttons for "New", "Copy", "Save", "Delete", and "Reset". A left sidebar contains a tree view with "Administration" expanded, showing "Users...", "Trunks...", "IP Phones...", "Platform Hardware...", "Call Control...", "Voice Mail...", "Auto-Attendant Menus", "Workgroups", "Schedules", "Communicator...", "System Directory", "Application Servers...", "SIP Servers..." (selected), "SIP Profiles", "Sites", "System Parameters...", and "Preferences". The main content area has a "Name:" field with "Voicemail", a "User Agent:" field with ".*", a "Priority:" field with "100", an "Enable" checkbox that is checked, and a "System Parameters:" section with a text area containing the following custom parameters: `acceptMWI=notify`, `Accept302=sip`, `HoldSupport=yes`, `AddrSupport=diversion`, `EnableSymmetricDtmf=yes`, `OptionsPing=1`, `SendEarlyMedia=1`, and `UseSipProxyOut=yes`.

- 2 In the **Name** field, enter a name for the SIP Profile, for example *Voicemail*.
- 3 In the **User Agent** field, enter a *period* followed by an *asterisk* (.*).
- 4 In the **Priority** field, enter *100*.
- 5 Select the **Enable** check box to enable the profile.
- 6 In the **System Parameters** field, enter the following custom parameters:
 - `acceptMWI=notify`
 - `Accept302=sip`
 - `HoldSupport=yes`
 - `AddrSupport=diversion`
 - `EnableSymmetricDtmf=yes`
 - `OptionsPing=1`
 - `SendEarlyMedia=1`
 - `UseSipProxyOut=yes`
- 7 Click **Save**.

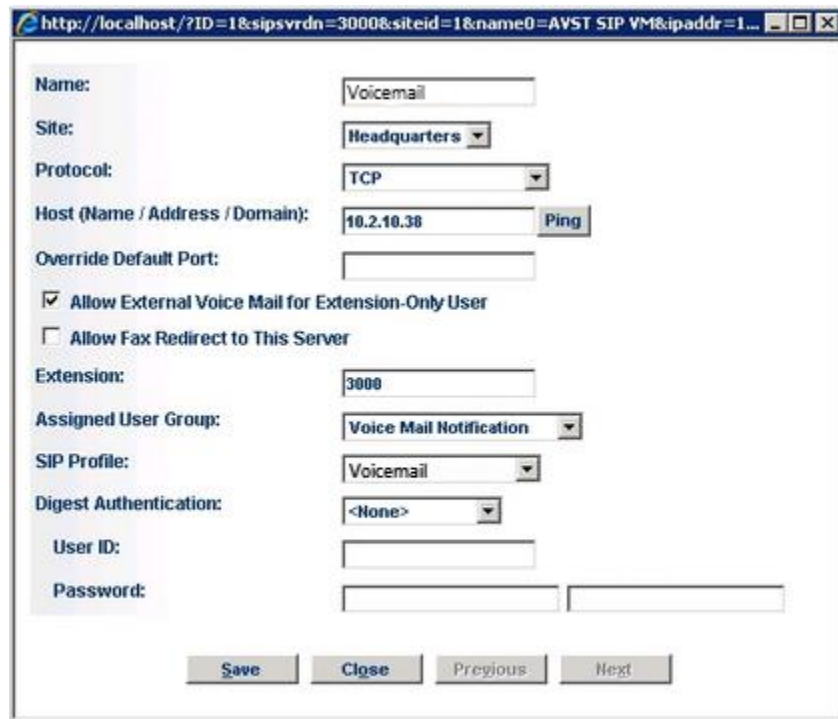
NOTE You can safely ignore warnings from the ShoreWare Director regarding custom SIP Profile configurations.

Creating the SIP Server for MiCollab AM

Create a SIP Server for the Voicemail integration.

To create a SIP Server for MiCollab AM:

- 1 Using the ShoreGear Director program, select **Administration** > **SIP Servers** > **SIP Servers**, and then click **New**.



The screenshot shows a web browser window with the URL `http://localhost/?ID=1&sipsvrdrn=3000&siteid=1&name0=AVST SIP VM&ipaddr=1...`. The form contains the following fields and options:

- Name:** Text box containing "Voicemail".
- Site:** Dropdown menu showing "Headquarters".
- Protocol:** Dropdown menu showing "TCP".
- Host (Name / Address / Domain):** Text box containing "10.2.10.38" with a "Ping" button next to it.
- Override Default Port:** Empty text box.
- ☒ **Allow External Voice Mail for Extension-Only User**
- ☐ **Allow Fax Redirect to This Server**
- Extension:** Text box containing "3000".
- Assigned User Group:** Dropdown menu showing "Voice Mail Notification".
- SIP Profile:** Dropdown menu showing "Voicemail".
- Digest Authentication:** Dropdown menu showing "<None>".
- User ID:** Empty text box.
- Password:** Two empty text boxes for password input.
- Buttons at the bottom: **Save**, **Close**, **Previous**, and **Next**.

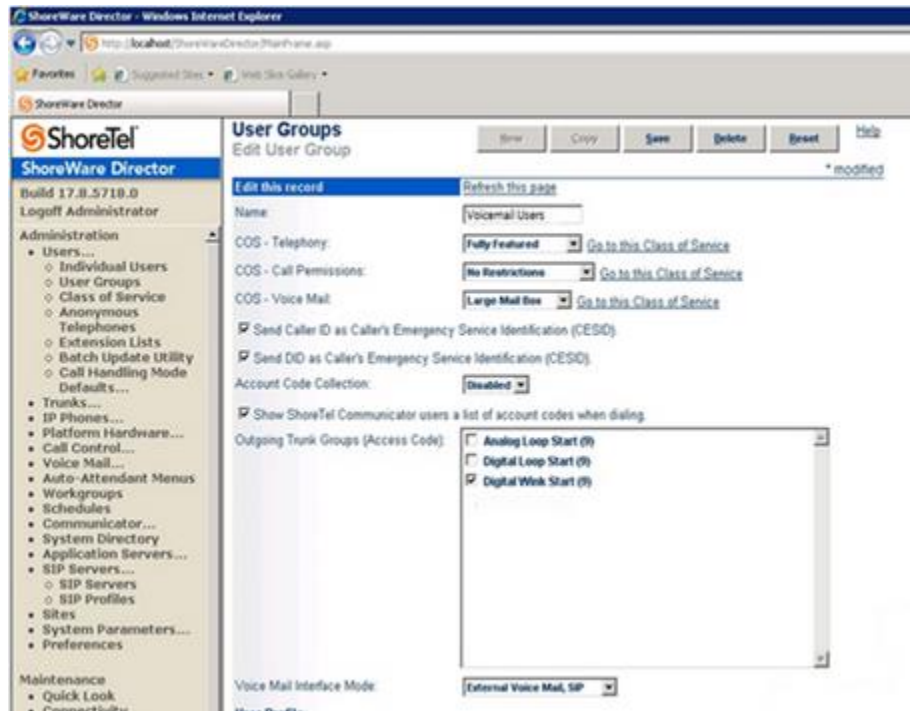
- 2 In the **Name** field, enter the name of the SIP Profile previously created, for example *Voicemail*.
- 3 In the **Site** field, select the site from the list.
- 4 Select **TCP** as the protocol
- 5 In the **Host (Name/Address/Domain)** field, enter the IP Address or FQDN of MiCollab AM. This is the IP Address or FQDN of the Call Server or System Server with Call Services to which the SIP ports are connected.
- 6 Select the **Allow External Voice Mail for Extension-Only User** check box.
- 7 In the **Extension** field, enter the pilot number of the MiCollab AM hunt group.
- 8 In the **Assigned User Group** field, select **Voice Mail Notification** from the list.
- 9 In the **SIP Profile** field, select the SIP Profile for the voicemail integration you created in the previous procedure, [Creating a SIP Profile for MiCollab AM](#).
- 10 In the **Digest Authentication** field, select **None**.
- 11 Click **Save**.

Creating the User Group for MiCollab AM

Create a User Group for the voicemail integration.

To create the User Group for MiCollab AM:

- 1 Using the ShoreWare Director program, go to **Administration > Users > User Groups**, and then click **New**.



- 2 In the **Name** field, enter a User Group name, for example *Voicemail Users*.
- 3 In the **COS Telephony** field, select **Fully Featured** from the list.
- 4 In the **COS Call Permissions** field, select **No Restrictions** from the list.
- 5 In the **COS Voice Mail** field, select **Large Mailbox** from the list.
- 6 Select the **Send Caller ID as Caller's Emergency Service Notification (CESID)** checkbox.
- 7 Select the **Send DID as Caller's Emergency Service Notification (CESID)** checkbox.
- 8 In the **Account Code Collection** field, select **Disabled**.
- 9 Select the **Show ShoreTel Communicator users a list of account codes when dialing** checkbox.
- 10 In the **Outgoing Trunk Groups (Access Code)** field, select **Digital Wink Start**.
- 11 In the **Voicemail Interface Mode** field, select **External Voice Mail SIP** from the list.

NOTE The remaining fields can retain their default settings.

- 12 Click **Save**.

Configuring Subscriber Telephone Extensions

Configure the subscriber (users) telephone extensions for use with MiCollab AM.

To configure Subscriber Telephone Extensions:

- 1 Using the ShoreWare Director program, go to **Administration > Users > Individual Users**, and then select a user.

The screenshot shows the 'Edit User' form in the ShoreWare Director application. The form is divided into several sections. The 'General' section is currently selected, showing fields for First Name, Last Name, Number, License Type, Access License, Caller ID, DID Range, DID Number, PSTN Follower, User Group, Site, Language, Primary Phone Port, Current Port, Jack #, and External Mailbox through Server. The 'License Type' field is set to 'Extension-Only', the 'User Group' is set to 'Voicemail Users', and the 'External Mailbox through Server' is set to 'Voicemail'. Red boxes highlight these three fields. The 'Access License' is set to 'Personal'. The 'Caller ID' field has a placeholder '(e.g. +1 (408) 331-3300)'. The 'DID Range' and 'DID Number' fields are empty. The 'PSTN Follower' is set to 'None'. The 'Site' is set to 'Headquarters'. The 'Language' is set to 'English(US)'. The 'Primary Phone Port' is set to 'IP Phones 00-10-40-14-A3-00'. The 'Current Port' is set to '00-10-40-14-A3-00'. The 'Jack #' field is empty. The 'External Mailbox through Server' is set to 'Voicemail'.

- 2 In the **License Type** field, select **Extension-Only**.
- 3 In the **User Group** field, select **Voicemail Users**, or the name used when you created the User Group.
- 4 In the **External Mailbox through Server** field on the **General Properties** sheet of each subscriber (user) extension, select the SIP Server you created in the procedure, [Creating the SIP Server for MiCollab AM](#) from the list.
- 5 Click **Save**.
- 6 Repeat this procedure for each telephone extension that is used by a MiCollab AM subscriber.

Configuring MiCollab AM

Once the telephone system is programmed, you must configure MiCollab AM for the integration. There are two ways you can configure MiCollab AM: (1) Configuring MiCollab AM for the telephone system integration when you are installing MiCollab AM for the first time, or (2) Configuring the existing MiCollab AM with the new telephone system integration.

Click the appropriate steps that your system requires from below and follow the steps:

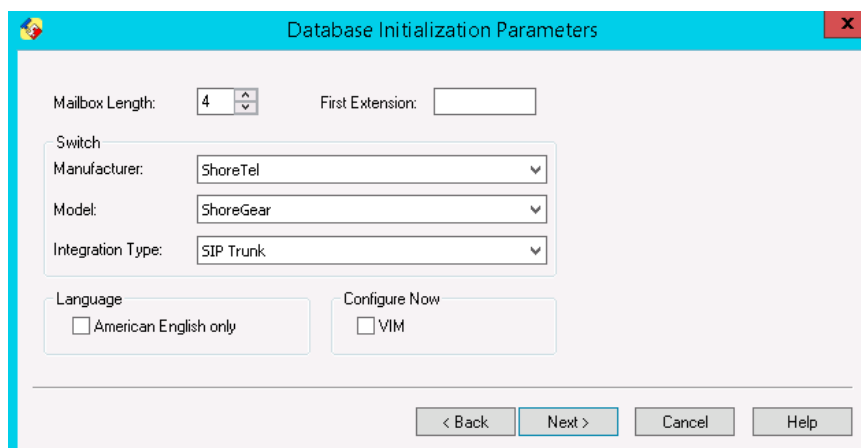
- [Configuring MiCollab AM for the Integration During Initial Installation](#): Integrate the telephone system while you install MiCollab AM for the first time.
- [Configuring Existing MiCollab AM for the Integration](#): Integrate a new telephone system on your exiting MiCollab AM system.

NOTE For general information on integrations, refer to the **Integrating MiCollab AM with the Telephone System** chapter in the *System Installation and Configuration Guide*, and the topic, **Integrating MiCollab AM with the Telephone System**, in the online help.

Configuring MiCollab AM for the Integration During Initial Installation

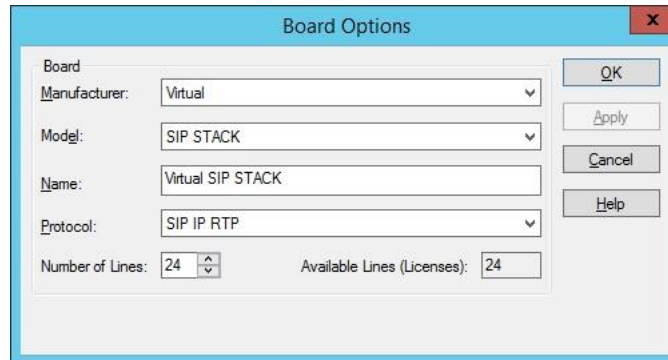
To configure MiCollab AM with the integration during the initial installation:

- 1 In the **Database Initialization Parameters** dialog box, configure the following options:



- a In the **Mailbox Length** box, enter the mailbox length in digits.
- b In the **First Extension** box, enter first extension number for the first line. You can also leave the **First Extension** box empty.
- c From the **Manufacturer** drop-down list, select **ShoreTel**.

- d From the **Model** drop-down list, select **ShoreGear**.
 - e From the **Integration Type** drop-down list, select **SIP Trunk**.
- 2 Click **Next**. The **Board Options** dialog box displays for the virtual board configuration.

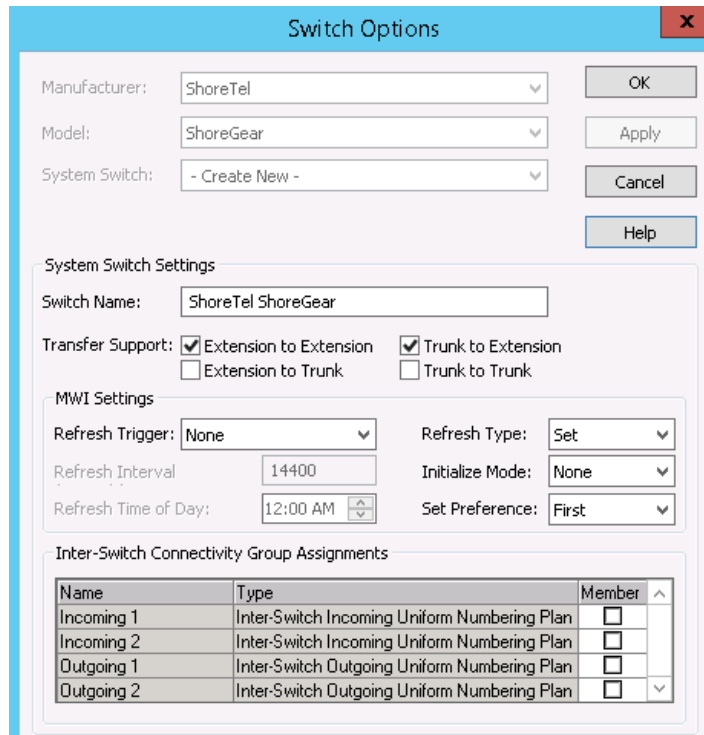


The **Board Options** dialog box is shown with the following configuration:

- Board**: (Label)
- Manufacturer**: Virtual (dropdown)
- Model**: SIP STACK (dropdown)
- Name**: Virtual SIP STACK (text field)
- Protocol**: SIP IP RTP (dropdown)
- Number of Lines**: 24 (spin box)
- Available Lines (Licenses)**: 24 (spin box)

Buttons on the right: OK, Apply, Cancel, Help.

- 3 In the **Board Options** dialog box, configure the following options:
- a From the **Manufacturer** drop-down list, select **Virtual**.
 - b From the **Model** drop-down list, select **SIP STACK**.
 - c In the **Name** field, the name for this board is automatically generated. Enter a new name if necessary.
 - d From the **Protocol** drop-down list, select **SIP IP RTP**.
 - e In the **Number of Lines** field, enter the number of lines this board uses. The total number of lines is limited by the capacity of the board and the number of **Available Line Licenses**.
- 4 Click **OK**. The **Switch Options** dialog box appears.



The **Switch Options** dialog box is shown with the following configuration:

- Manufacturer**: ShoreTel (dropdown)
- Model**: ShoreGear (dropdown)
- System Switch**: - Create New - (dropdown)

Buttons on the right: OK, Apply, Cancel, Help.

System Switch Settings

- Switch Name**: ShoreTel ShoreGear (text field)
- Transfer Support**:
 - ☒ Extension to Extension
 - ☒ Trunk to Extension
 - ☐ Extension to Trunk
 - ☐ Trunk to Trunk

MWI Settings

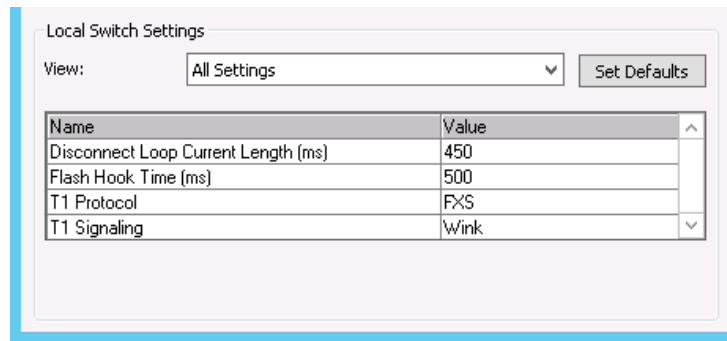
- Refresh Trigger**: None (dropdown)
- Refresh Interval**: 14400 (text field)
- Refresh Time of Day**: 12:00 AM (spin box)
- Refresh Type**: Set (dropdown)
- Initialize Mode**: None (dropdown)
- Set Preference**: First (dropdown)

Inter-Switch Connectivity Group Assignments

Name	Type	Member
Incoming 1	Inter-Switch Incoming Uniform Numbering Plan	<input type="checkbox"/>
Incoming 2	Inter-Switch Incoming Uniform Numbering Plan	<input type="checkbox"/>
Outgoing 1	Inter-Switch Outgoing Uniform Numbering Plan	<input type="checkbox"/>
Outgoing 2	Inter-Switch Outgoing Uniform Numbering Plan	<input type="checkbox"/>

Image continued on next page

Image continued from previous page



Local Switch Settings

View: All Settings Set Defaults

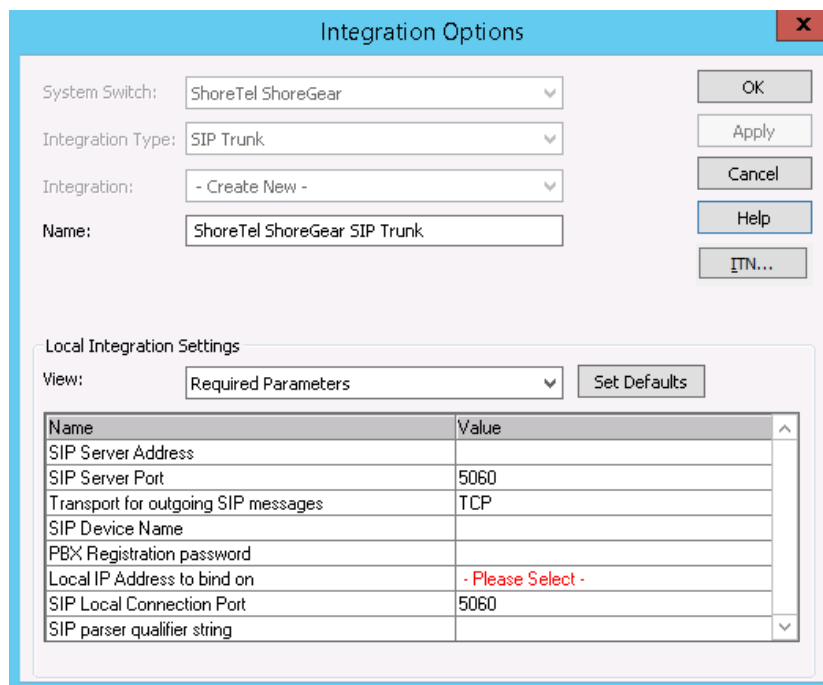
Name	Value
Disconnect Loop Current Length (ms)	450
Flash Hook Time (ms)	500
T1 Protocol	FXS
T1 Signaling	Wink

- 5 If necessary, make any changes to the default settings your site requires in the **Switch Options** dialog box.

NOTE The settings related to the telephone system in the **Switch Options** dialog box are filled in automatically when you select the correct telephone system during setup.

If you need to customize settings on the **Switch Options** dialog box to meet requirements specific to your site, refer to the documentation accompanying the telephone system, the online help, and the *System Installation and Configuration Guide*.

- 6 Click **OK**. The **Integration Options** dialog box appears.



Integration Options

System Switch: ShoreTel ShoreGear OK

Integration Type: SIP Trunk Apply

Integration: - Create New - Cancel

Name: ShoreTel ShoreGear SIP Trunk Help

ITN...

Local Integration Settings

View: Required Parameters Set Defaults

Name	Value
SIP Server Address	
SIP Server Port	5060
Transport for outgoing SIP messages	TCP
SIP Device Name	
PBX Registration password	
Local IP Address to bind on	- Please Select -
SIP Local Connection Port	5060
SIP parser qualifier string	

- 7 In the **Integration Options** dialog box, configure the following options:
 - a In the **Local Integration Settings** section, select the **Required Parameters** view, and configure the following settings:

Table 3. Required Parameters View – Integration Options

Field	Value
SIP Server Address	<p>Enter the Virtual IP Address (VIP) configured on the ShoreGear switch.</p> <p>This value must match the value entered in the Creating a Virtual IP Address (VIP) for SIP Proxy Redundancy section.</p> <p>If a VIP is not created, enter the FQDN or IP Address of ShoreGear PBX.</p> <p>This address must match the value selected in the Creating the SIP Server for MiCollab AM section.</p>
SIP Server Port	<p>Enter the listening port of the ShoreGear PBX.</p> <p>The default value is 5060.</p> <p>This port number must match the port number configured on the ShoreGear PBX.</p>
Transport for outgoing SIP messages	<p>Select the transport protocol used for sending out SIP messages. This value must match the value selected in the Creating the SIP Server for MiCollab AM section.</p>
SIP Device Name	<p>Enter the MiCollab AM extension number you configured on the ShoreGear PBX in the Creating the SIP Server for MiCollab AM section.</p> <p>This number should match the extension number programmed on ShoreGear for the MiCollab AM ports.</p>
PBX Registration Password	<p>Enter the password configured for the Extension number on the ShoreGear.</p> <p>In this example, no password is configured (blank).</p>
Local IP Address to bind on	<p>Select the Call Server's IP Address for this integration.</p>
SIP Local Connection Port	<p>Enter the local port on which SIP messages are expected.</p> <p>The default value is 5060.</p>
SIP parser qualifier string	<ul style="list-style-type: none"> • Single SIP integration on the call server: Enter the local IP address to which the integration is bound. This field is used by MiCollab AM to match SIP packets to the appropriate SIP integration. • Multiple SIP integrations on the call server: Use a string that is unique to each SIP integration. <p>For example:</p> <p>The extension that will be used as the hunt number on the PBX followed by the @ symbol and the IP of the call server, such as 5000@172.16.4.202. The hunt number must be unique across all IP integrations.</p>

The Fully Qualified Domain Name (FQDN) of the switch, such as pbx1.sipdomain.com.

NOTE This setting must match a string in the SIP header that is unique to this particular integration.

Media Packet Size (milliseconds) MiCollab AM sends/receives packets containing the number of milliseconds worth of audio data set here.
The default value is **20**.

- 8 Click **OK**. The **Switch Section Options** dialog box appears.

Name	Value
Incoming Hunt Mode	Terminal
Hunt Group Access Code	

- 9 In the **Switch Section Options** dialog box, configure the following options.
- a In the **Local Switch Settings** section, select **Required Parameters** view.
 - b In the **Incoming Hunt Mode** field, select **Terminal**.
 - c In the **Hunt Group Access Code** field, enter the extension number that you programmed previously in the [Creating the SIP Server for MiCollab AM](#) section.
 - d Click **OK**.
- 10 Continue through and complete the configuration. At the end of the configuration, a confirmation dialog box appears. Click **OK**.

- 11 If **MiCollab AM Configuration** does not open automatically after the configuration completes, open **MiCollab AM Configuration**, and select the **Lines** tab.
- 12 In the table from the **Lines** tab, enter the extension number of each integrated line on the Call Server.
- 13 Click **OK** to save all changes.

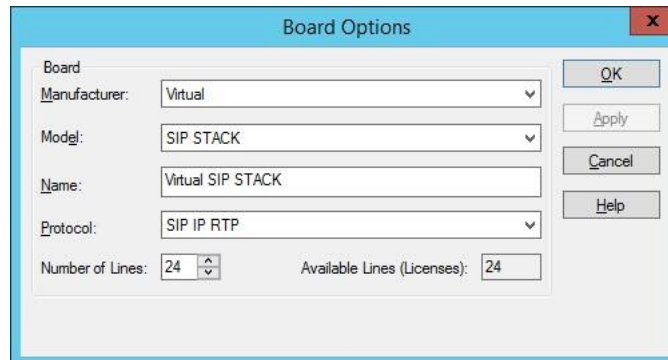
Configuring Existing MiCollab AM for the Integration

To configure exiting MiCollab AM for the telephone integration:

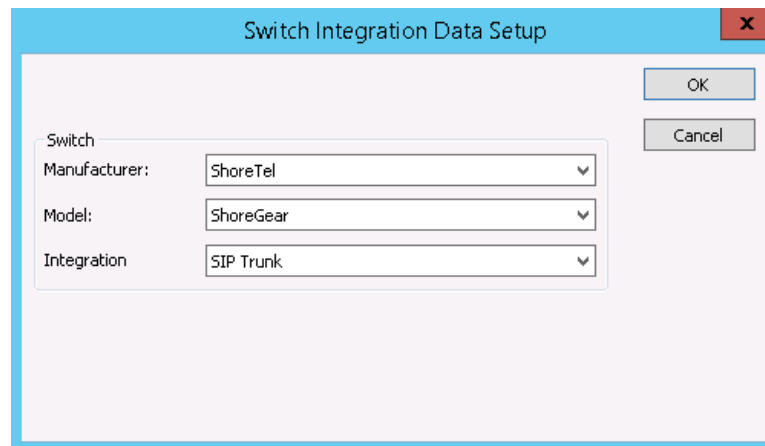
- 1 Open **MiCollab AM Configuration**, and go to the **Main** tab.
- 2 In the **Main** tab, click **Shutdown** to stop the system. Wait until the **Current Status** shows **Stopped**.

NOTE If you have not configured the virtual board with your MiCollab AM system yet, complete **Step 3**. If your MiCollab AM already has the virtual board configured, skip to **Step 4**.

- 3 **[Optional]** Select the **Boards** tab, and then click the **Add** button. The **Board Options** dialog box appears.



- a From the **Manufacturer** drop-down list, select **Virtual**.
 - b From the **Model** drop-down list, select **SIP STACK**.
 - c In the **Name** field, the name for this board is automatically generated. Enter a new name if necessary.
 - d From the **Protocol** drop-down list, select **SIP IP RTP**.
 - e In the **Number of Lines** field, enter the number of lines this board uses. The total number of lines is limited by the capacity of the board and the number of **Available Line Licenses**.
 - f Click **OK**.
- 4 Select the **Switches** tab and click the **Add** button. The **Switch Integration Data Setup** dialog box appears.



Switch Integration Data Setup

Switch

Manufacturer: ShoreTel

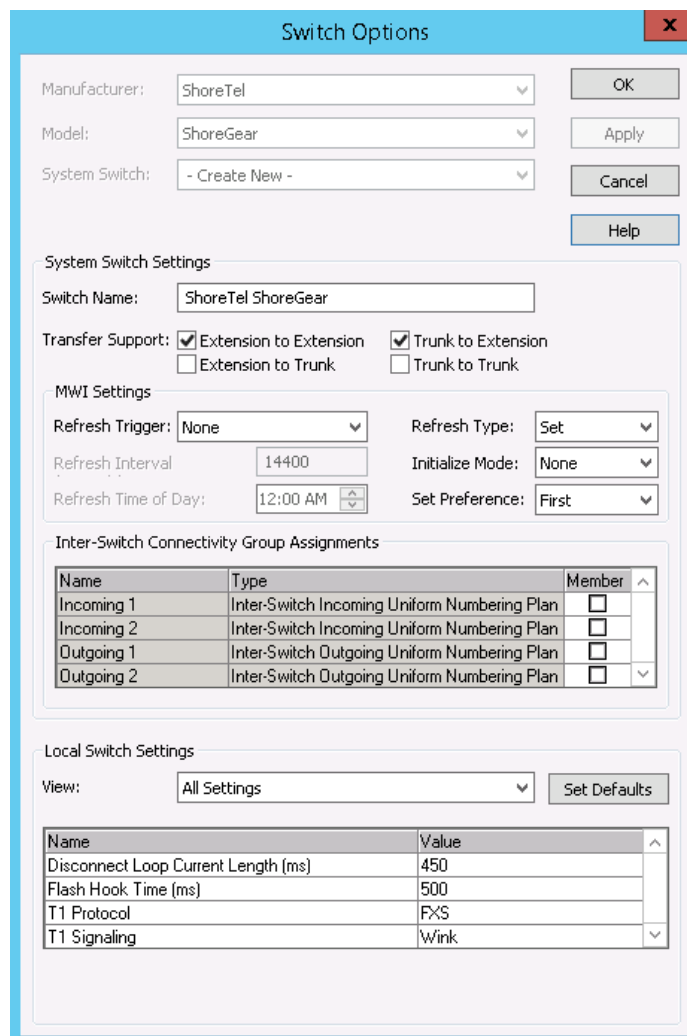
Model: ShoreGear

Integration: SIP Trunk

OK

Cancel

- a From the **Manufacturer** drop-down list, select **ShoreTel**.
 - b From the **Model** drop-down list, select **ShoreGear**.
 - c From the **Integration Type** drop-down list, select **SIP Trunk**.
- 5 Click **OK**. The **Switch Options** dialog box appears.



Switch Options

Manufacturer: ShoreTel

Model: ShoreGear

System Switch: - Create New -

OK

Apply

Cancel

Help

System Switch Settings

Switch Name: ShoreTel ShoreGear

Transfer Support: ☒ Extension to Extension ☒ Trunk to Extension
☐ Extension to Trunk ☐ Trunk to Trunk

MWI Settings

Refresh Trigger: None

Refresh Type: Set

Refresh Interval: 14400

Initialize Mode: None

Refresh Time of Day: 12:00 AM

Set Preference: First

Inter-Switch Connectivity Group Assignments

Name	Type	Member
Incoming 1	Inter-Switch Incoming Uniform Numbering Plan	<input type="checkbox"/>
Incoming 2	Inter-Switch Incoming Uniform Numbering Plan	<input type="checkbox"/>
Outgoing 1	Inter-Switch Outgoing Uniform Numbering Plan	<input type="checkbox"/>
Outgoing 2	Inter-Switch Outgoing Uniform Numbering Plan	<input type="checkbox"/>

Local Switch Settings

View: All Settings

Set Defaults

Name	Value
Disconnect Loop Current Length (ms)	450
Flash Hook Time (ms)	500
T1 Protocol	FXS
T1 Signaling	Wink

- 6 If necessary, make any changes to the default settings your site requires in the **Switch Options** dialog box.

NOTE The settings related to the telephone system in the **Switch Options** dialog box are filled in automatically when you select the correct telephone system during setup.

If you need to customize settings on the **Switch Options** dialog box to meet requirements specific to your site, refer to the documentation accompanying the telephone system, the online help, and the *System Installation and Configuration Guide*.

- 7 Click **OK**. The **Integration Options** dialog box appears.

Name	Value
SIP Server Address	
SIP Server Port	5060
Transport for outgoing SIP messages	TCP
SIP Device Name	
PBX Registration password	
Local IP Address to bind on	- Please Select -
SIP Local Connection Port	5060
SIP parser qualifier string	

- 8 In the **Integration Options** dialog box, configure the following options:

- a In the **Local Integration Settings** section, select the **Required Parameters** View and configure the following settings:

Table 4. Required Parameters View – Integration Options

Field	Value
SIP Server Address	<p>Enter the Virtual IP Address (VIP) configured on the ShoreGear switch.</p> <p>This value must match the value entered in the Creating a Virtual IP Address (VIP) for SIP Proxy Redundancy section.</p> <p>If a VIP is not created, enter the FQDN or IP Address of ShoreGear PBX.</p> <p>This address must match the value selected in the Creating the SIP Server for MiCollab AM section.</p>
SIP Server Port	<p>Enter the listening port of the ShoreGear PBX.</p> <p>The default value is 5060.</p>

	This port number must match the port number configured on the ShoreGear PBX.
Transport for outgoing SIP messages	Select TCP from the list. This value must match the value selected in the Creating the SIP Server for MiCollab AM section.
SIP Device Name	<p>Enter the MiCollab AM extension number you configured on the ShoreGear PBX in the Creating the SIP Server for MiCollab AM section.</p> <p>This number should match the extension number programmed on ShoreGear for the MiCollab AM ports.</p>
PBX Registration Password	<p>Enter the password configured for the Extension number on the ShoreGear.</p> <p>In this example, no password is configured (blank).</p>
Local IP Address to bind on	Select the Call Server's IP Address for this integration.
SIP Local Connection Port	<p>Enter the local port on which SIP messages are expected.</p> <p>The default value is 5060.</p>
SIP parser qualifier string	<ul style="list-style-type: none"> • Single SIP integration on the call server: Enter the local IP address to which the integration is bound. This field is used by MiCollab AM to match SIP packets to the appropriate SIP integration. • Multiple SIP integrations on the call server: Use a string that is unique to each SIP integration. <p>For example:</p> <p>The extension that will be used as the hunt number on the PBX followed by the @ symbol and the IP of the call server, such as 5000@172.16.4.202. The hunt number must be unique across all IP integrations.</p> <p>The Fully Qualified Domain Name (FQDN) of the switch, such as pbx1.sipdomain.com.</p> <p>NOTE This setting must match a string in the SIP header that is unique to this particular integration.</p>
Media Packet Size (milliseconds)	<p>MiCollab AM sends/receives packets containing the number of milliseconds worth of audio data set here.</p> <p>The default value is 20.</p>

- b** Click **OK**. The **Switch Section Options** dialog box appears.

Switch Section Options

Local Switch: ShoreTel ShoreGear

System Switch Section: - Create New -

System Switch Section Settings

Name: ShoreTel ShoreGear Section

Node Code:

Location Code:

Location: Seattle

MWI Integration: ShoreTel ShoreGear SIP Trunk

Local Switch Section Settings

View: Required Parameters

Set Defaults

Name	Value
Incoming Hunt Mode	Terminal
Hunt Group Access Code	

- 9 In the **Switch Section Options** dialog box, configure the following options.
 - a In the **Local Switch Settings** section, select **Required Parameters** view.
 - b In the **Incoming Hunt Mode** field, select **Terminal**.
 - c In the **Hunt Group Access Code** field, enter the extension number that you programmed previously in the [Creating the SIP Server for MiCollab AM](#) section.
 - d Click **OK**.
- 10 In **MiCollab AM Configuration**, verify that the telephone system is properly added and configured in the **Switches**, **Switch Sections**, and **Integrations** tabs.
- 11 Select the **Lines** tab.
- 12 In the table from the **Lines** tab, enter the extension number of each integrated line on the Call Server.
- 13 Click **OK** to save all changes.

Configuring MiCollab AM for SIP Failover

MiCollab AM can be configured for automatic failover to the secondary SIP server in the event of the primary/host SIP server failure. Use the instructions provided in this section to add or remove secondary SIP server(s) for failover.

To add a SIP failover server:

- 1 From **MiCollab AM Configuration**, click the **Integrations** tab.
- 2 From the **Integrations** list, select your integration, and then click **Edit**.
- 3 In the **Integration Options** dialog box, go to the **Local Integration Settings** section.
- 4 From the **View** drop-down list, select **Failover Server Settings**.
- 5 Click the **Add Failover Server** button. Two new rows are added to configure the secondary SIP server.
- 6 In the **Secondary SIP Server Address** and **Secondary SIP Server Port** rows, enter the appropriate value as follows:

Table 5. Secondary SIP Server Address and the Secondary SIP Server Port example

Field	Value
Secondary SIP Server Address	<p>Enter the TCP/IP address or an FQDN of the secondary node.</p> <p>For example: The IP address 123.45.6.789 as displayed on the Review/Modify SIP Gateway screen.</p> <p>NOTE This integration requires the machine name to be a fully qualified domain name. Therefore, use the Machine Name field as displayed on the Review/Modify SIP Gateway screen during the integration process.</p> <p>IMPORTANT This value must match the configuration on the Gateway of the secondary node.</p>
Secondary SIP Server Port	<p>Enter the port number of the secondary node. The default value is 5060.</p>

- 7 From the **View** drop-down list, select **Integration Specific Parameters**. The **Integration Specific Parameters** view appears.
- 8 In the **Integration Specific Parameters** list, enter the information as shown in the following table:

NOTE The parameters in the following table is listed in alphabetical order. The actual Integration Specific Parameters on your system may not be listed in the same order presented in the table below.

Table 6. Integration Specific Parameters

Field	Value
Enable SIP server failover	Select this check box to allow for failover and to enable the failover server setting changes.
Delay (in ms) between Failover attempts	The delay in milliseconds before MiCollab AM attempts to register its port with the SIP server. The default is 1000 ms.
Incoming off hook delay	800
Outgoing off hook delay	0
On hook delay	300
Type of Call Progress to use for External Calls	<p>How this should be set depends on the gateway used for the integration.</p> <ul style="list-style-type: none"> • If the gateway supports call progress through to the endpoint, set to Digital. • If the gateway reports early that the call is connected, such as before the phone rings or while the phone is ringing, set to Media.

- 9 Click **Apply** to save the changes.
- 10 To add another failover server repeat **Steps 4-9**.
- 11 Click **OK** to close the **Integration Options** dialog box.

To remove a SIP Failover Server:

- 1 From **MiCollab AM Configuration**, click the **Integrations** tab.
- 2 From the **Integrations** list, select your integration, and then click **Edit**.
- 3 In the **Integration Options** dialog box, go to the **Local Integration Settings** section.
- 4 From the **View** drop-down list, select **Failover Server Settings**.
- 5 In the **Failover Server Settings** view, click the **Remove Failover Server** button.
- 6 At the confirmation prompt, click **Yes** to confirm the deletion.

NOTE If multiple servers are listed, the last server address and port pair on the list is deleted first.

- 7 Click **Apply** to save the changes, and then click **OK** to close the **Integration Options** dialog box.

Changing the Network Binding Order on the MiCollab AM Platform

If your MiCollab AM server platform is a component of two or more local or wide area networks (LANs or WANs), you must make sure that this integration does not interfere with the normal network operation of the server. By default, MiCollab AM uses the primary (public) network interface card (NIC) in the platform, the first NIC in the network binding order. If you want MiCollab AM to use a NIC other than the first one, you must make several required configuration changes. It is much easier to configure the Integration to use another NIC by simply setting the integration parameter **Local IP Address to bind on** to the address of the NIC connected to the PBX.

NOTE The operating system gives precedence to the first network connection in the list followed by the remaining connections based on their position in the list.

The instructions in this section ensure that the binding order is correct when you set up the integration. If you replace a NIC on the MiCollab AM server platform later, the platform's operating system registers the new adapter at the bottom of its binding order. Restoring the original binding order should correct any problems caused by the change.

IMPORTANT The following procedure shifts the binding order of the network interface cards. To determine which NIC is associated with a specific network connection, right-click the connection in the **Network Connections** window, and then select **Properties**.

Windows Server 2008 R2 with Service Pack 1

To change the binding order of multiple NICs:

- 1 From the taskbar, click **Start** > **Control Panel**.
- 2 In the **Control Panel**, click **Network and Sharing Center**.
- 3 On the left pane, select **Change Adapter Settings**.
- 4 Press **Alt** to display the menu bar.
- 5 On the menu bar, select **Advanced**, and then click **Advanced Settings**.
- 6 On the **Adapters and Bindings** tab of **Advanced Settings**, click the network connection that serves MiCollab AM.
- 7 Click the up arrow button to the right of the **Connections** list as many times as needed to move the connection to the top of the list.
- 8 Click **OK**, and then close the **Network Connections** window and the **Control Panel**.

Windows Server 2012 R2

To change the binding order of multiple NICs:

- 1 From the taskbar, click **Start > Control Panel**.
- 2 In the **Control Panel**, click **Network and Internet > Network and Sharing Center**.
- 3 On the left pane, select **Change Adapter Settings**.
- 4 Press **Alt** to display the menu bar.
- 5 On the menu bar, select **Advanced**, and then click **Advanced Settings**.
- 6 On the **Adapters and Bindings** tab of **Advanced Settings**, click the network connection that serves MiCollab AM.
- 7 Click the up arrow button to the right of the **Connections** list as many times as needed to move the connection to the top of the list.
- 8 Click **OK**, and then close the **Network Connections** window and the **Control Panel**.

Windows Server 2016

To change the binding order of multiple NICs:

- 1 From the taskbar, select **Start > Control Panel**.
- 2 In the **Control Panel**, click **Network and Internet > Network and Sharing Center**.
- 3 On the left pane, select **Change Adapter Settings**.
- 4 Right-click the network connection that serves MiCollab AM and then select **Properties**.
- 5 On the **Networking** tab of the **Local Area Connection Properties** dialog box, select **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
- 6 On the **General** tab of the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, click the **Advanced** button.
- 7 On the **IP Settings** tab of the **Advanced TCP/IP Settings** dialog box, clear the **Automatic metric** check box and then type in a low value in the **Interface metric** field. The lower the value, the higher the priority.

NOTE For all Windows systems, the value 1 is reserved for the loopback adapter. It is recommended to use a value of 2 or higher for the network connection that serves MiCollab AM.

- 8 Click **OK** on all of the dialog boxes to save the settings, and then close the **Local Area Connection Properties** dialog box.
- 9 Repeat steps 4 through 8 to assign an Interface metric value to all other network adapters.

Configuring Quality of Service (QoS)

As of version 6.0, MiCollab AM has no internal support for QoS. QoS must now be implemented externally via group policies as Policy-Based QoS. Refer to your operating system's documentation for details.

Table 7. QoS Configuration

Field	Setting
Application Name	At_TelephonyServer.exe
Protocol	Match the setting used for the integration UDP or TCP
Source Port	<p>MiCollab AM requires a range of ports for audio support. The MiCollab AM audio ports start at the Local Media Base UDP Port configured in the Server tab. Each MiCollab AM line reserves 10 ports. Hence, the port range starts from the number configured there, and goes to the last port of the last line. The formula for calculating the highest port number in the range is as follows:</p> $\text{BasePortNumber} + (\text{NumberOfCXPorts} * 10) - 1.$ <p>Hence, if the base port is 10000, and MiCollab AM has 8 lines, then the port range to use would be:</p> <p>10000:10079</p>
DSCP Value	46