

MiCollab Advanced Messaging 9.4 Cisco Unified Communications Manager SCCP

Integration Technical Note

For version 9.4 and above

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Preface

This Integration Technical Note (ITN) is written for dealers who are experienced with MiCollab Advanced Messaging (MiCollab AM) and who are familiar with its procedures and terminology. It also assumes that you are familiar with the features and functionality of the Cisco Unified Communications Manager (CallManager) and the Skinny Client Control Protocol (SCCP).

This document describes how to integrate MiCollab AM with a Cisco Unified Communications Manager system using SCCP. Critical application considerations are documented, as well as installation and programming procedures necessary to integrate MiCollab AM with Cisco Unified Communications Manager, referred to throughout this document as Unified CM.

The Unified Communications Manager is the software-based call-processing component of the Cisco IP telephony solution. SCCP is the Cisco call control signaling protocol used by Unified CM to set up calls between the Unified CM server and other devices, such as IP telephones and MiCollab AM. SCCP is used for registration of handsets and gateways with Unified CM, and for call processing functions such as call setup, teardown, and supplementary services.

The SCCP integration is a station-set-emulation type integration. The MiCollab AM ports are configured as type 7940 one-line telephones. Since Unified CM uses the unique Media Access Control (MAC) addresses of the IP telephones for identification, MiCollab AM provides simulated MAC addresses for programming of these telephone ports in Unified CM.

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 MiCollab AM Documentation Library includes the following documents and resources:

- **Administration Documentation.** Available as a PDF only. Contains the following:
 - **Administration Guides.** Available as a PDF only. Contains administrative guides for administrators about how to manage and configure the messaging system.
 - **Quick Reference Cards (QRC).** Contains shortcuts and quick instructions telling subscribers how to access and use the messaging system.
 - **User Guides.** Available as a PDF only. Contains user guides for subscribers about accessing the messaging system and checking and sending messages.
- **Server Documentation.** Available as a PDF only. Contains the following:

- **Developer Resources.** Contains programming guides and API references for developers for integrating the server clients and web applications with MiCollab AM.
- **Installation and Configuration.** Available as a PDF only. Contains installation and configuration guides for server administrators about how to install and configure the messaging system.
- **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.
- **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 documents and program files from our partner web site: www.mitel.com

Help

The primary source of information about MiCollab AM is the online help available within any of its administrative utilities. You can access **Help** by clicking the **Help** button in the dialog box or window in which you are working.

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** Titles of other documents are shown in italics.

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

- **User Interface (UI) Element Names.** Names of UI elements such as dialog boxes, windows, screens, menu items, tabs, buttons, and icons 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 MiCollab AM 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.

For more detailed documents, refer to the following list of references:

Table 1. References

Document Type	Document Title
Administration Documentation	<i>System Administration Guide</i>
Server Documentation	<i>System Installation and Configuration Guide</i>
Online help	MiCollab AM online help system

For specific information about Unified CM and SCCP, please refer to the appropriate Cisco documentation.

Features Supported by This Integration

The following tables list the features supported using the Cisco Unified Communications Manager SCCP integration.

Table 2. 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
Do Not Disturb	Yes

Table 3. Integration features supported for Cisco Unified Communication Manager SCCP

Feature	Supported	Notes
Automatic subscriber logon	Yes	
ANI/CLI	Yes	
Announce Busy greeting on forward busy calls	Yes	
Call screening	Yes	
Caller queuing	Yes	Note 1
DNIS	No	
End-to-end DTMF, attendant console	Yes	
End-to-end DTMF, proprietary telephones	Yes	
Fax Tone Detection	Yes	
Internal calling party ID for reply	Yes	
IPv6	No	
Live record, integrated	No	
Live reply to sender	Yes	
Message notification callouts	Yes	Note 2
MWI, set/clear	Yes	
MWI, inband/outband	Inband	
Networking, analog	Yes	
Overflow from MiCollab AM to attendant	Yes	
Overflow to MiCollab AM from attendant	Yes	
PBX-provided disconnect signaling	Yes	
Revert to operator	Yes	

Transfers, blind	Yes	Note 3
Transfers, confirmed	Yes	
Transfers, fully supervised	Yes	
Transfers, monitored	Yes	
Trunk ID for call routing	No	
Multiple Integrations	Yes	Note 4

NOTES

1. Caller Queuing is specific to each local Call Server. Call Servers within the system are unaware of queued calls to the same subscriber on other Call Servers. For more information, refer to the [Critical Application Considerations](#) section.
2. Do not direct message notification callouts to a station that is forwarded to MiCollab AM.
3. See the note regarding blind transfers in [Critical Application Considerations](#).
4. Refer to the [Critical Application Considerations](#) section.

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 Call Queuing feature does not transcend the Call Server. Calls may be queued on multiple Call Servers for the same subscriber but Call Servers do not have knowledge of calls in the queue on other Call Servers within the system. Callers may be prompted with specific information about their place in the queue; however, the information pertains to the specific Call Server on which their call is queued.
- Before it initiates a blind transfer, Cisco Unified Communications Manager evaluates the destination number against its dial plan. If the destination number satisfies the criteria in the dial plan, Unified CM then initiates the transfer using the same method as it would if a subscriber pressed a transfer key on one of the system's extension telephones. Because of this, a blind transfer to a destination number that does not satisfy the dial plan criteria may fail. Note also that in such cases, Unified CM may hold the line active until it finally drops the caller. If Unified CM has failed over to a Survivable Remote Site Telephony (SRST) router, such transfers cause MiCollab AM line ports to become out of service.
- Do not use the MiCollab AM immediate message notification feature with any station programmed to forward to voice mail. If MiCollab AM attempts an immediate message notification callout to a station programmed to forward to MiCollab AM, and that station is busy or ring-no-answer (RNA), the callout forwards to the subscriber's mailbox.
- Non-numeric DTMF tones cannot be used as any character in the station number. The maximum length of a station number is ten digits.
- Unified CM performs its own call progress detection, and MiCollab AM relies on that call progress detection for all calls that it receives through Unified CM. This configuration may provide call progress detection results that vary slightly from results obtained through integration with a circuit-switched telephone system. If subscribers encounter silence or ring tones that seem confusing, contact the Cisco Technical Assistance Center (TAC), either by telephone or at www.cisco.com, for information on how to adjust Unified CM call progress detection.

- Do not activate the operating system's Network Teaming driver to allow teamed network interface cards (NICs). This feature can interfere with the integration.
- Depending on the characteristics of the network, you may need to adjust the size of the memory buffer that the system provides to protect against jitter distortion in the voice signals it processes. Use the **mgcp playout** command to adjust this parameter on Cisco routers. In some cases, an initial buffered play-out value of 200 ms and an upper limit of 250 ms (as set by the command **mgcp playout adaptive 200 4 250**) works well; however, you may need to adjust these values for the characteristics of your network.
- If the telephone system is configured to fail over to a Cisco router with SRST capabilities, MWI operations become inoperable until service is restored on the telephone system. In addition, because the number of priority levels that can be assigned to lines in a hunt group is limited to ten on the router, only ten lines can be active during failover.
- On the **Hunt Pilot Configuration** page, be sure that the **Connected Line ID Presentation** field is set to **Default** or **Allowed**. A setting of **Restricted** causes calls to the hunt pilot number to answer non-integrated.
- MiCollab AM 9.4 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)
- 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

Please refer to the Cisco web site, www.cisco.com, for a complete list of current part numbers for the following products:

- Cisco Media Convergence Server (MCS) or other Cisco approved server
- Cisco Unified Communications Manager version 12.5 or prior supported versions
- Cisco SRST router with IOS version 15.1 or prior supported versions

MiCollab AM Requirements

- MiCollab AM software version 9.4
- MiCollab AM software key diskette or feature file with Cisco Unified Communications Manager SCCP Integration enabled and one Virtual license enabled for each Cisco port
- One or two 10 MB, 100 MB, or 1000 MB (gigabit) network interface cards with cables

Programming the Telephone System

Follow the recommendations and programming examples in this section to program Unified CM 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 Unified CM. Programming is done from the Cisco Unified Communications Manager Administration application. Refer to the *Cisco Unified Communications Manager SCCP Application Note* or the online help for specific information on programming the telephone system.

Creating the Simulated MAC Addresses for MiCollab AM

You can create simulated MAC addresses using the extension numbers of the MiCollab AM ports. Using this method allows you to connect Unified CM extensions to any Call Server in the system without reference to the MiCollab AM serial number. Extension numbers can be easily moved to another Call Server in the system without having to reconfigure the MAC address of the port. This method is simple and requires only the extension numbers of the MiCollab AM ports to create the MAC address of each port.

NOTE Please refer to [Appendix A — Calculating the Simulated MAC Addresses for MiCollab AM Ports by MiCollab AM Serial Number](#) for information on creating MAC addresses with a MiCollab AM serial number or simulated MiCollab AM serial number.

The extension numbers of the MiCollab AM ports are used to fill the last or least significant numbers of the MAC address. For example, if you are using 4-digit extension numbers the address scheme is:

Table 4. MAC Addresses for MiCollab AM

MiCollab AM extension number	Unified CM MAC Address of port
3001	SEP000000003001
3002	SEP000000003002
3003	SEP000000003003
3004	SEP000000003004

IMPORTANT Although MAC addresses are typically hexadecimal, the extension numbers must be decimal and match the line numbers assigned to MiCollab AM.

NOTE Assigning the same extension numbers to multiple Call Servers can cause the integration to fail.

Programming the MiCollab AM Ports

Program the station ports for MiCollab AM ports as 7940-type telephones.

To program each MiCollab AM port:

- 1 From Cisco Unified Communications Manager Administration, select **Device**, and then select **Phone**.
- 2 Click **Add New**, select **Cisco 7940** as the Phone Type, and then click **Next**.
- 3 Select **SCCP** from the Select the device protocol list, and then click **Next**.
- 4 Enter the MAC address calculated in the previous section, or Appendix A, in the MAC Address field.
- 5 Select the Device Pool to which the port belongs.
- 6 From the Phone Button Template list, select **Standard 7940 SCCP**.
- 7 From the Device Security Profile list under Protocol Specific Information, select **Cisco 7940–Standard SCCP Non-Secure Profile**, and then click **Save**.
- 8 Click the **Line [1]–Add a new DN** link.
- 9 Enter the Directory Number (DN) for the port.
- 10 Set the Maximum Number of Calls parameter to 2, and then set the Busy Trigger parameter to 1 to disable call waiting.
- 11 Click **Save**.

Programming the Hunt Group for MiCollab AM Ports

The use of Unified CM Attendant hunt groups for MiCollab AM ports causes unexpected results when forwarding to the pilot number. Instead, it is recommended that you configure the MiCollab AM ports into a hunt group as shown in the following procedure.

To create the Line Group:

The following procedure incorporates the ports you have just defined into a line group for use in the Unified CM hunting scheme.

- 1 On the Call Routing menu, point to **Route/Hunt**, and then click **Line Group**.
- 2 Click **Add New**.
- 3 In the Line Group Name box, type a descriptive name (such as MiCollab AM) for the line group.

IMPORTANT Do not select Broadcast in the following step.

- 4 In the Distribution Algorithm list, select **Longest Idle Time** (the default), **Top Down**, or **Circular**.
- 5 In the Available DN/Route Partition list, click the directory numbers you want to add to the line group while holding down the Shift key to select all of them at once.
- 6 Click **Add to Line Group** to add the selected directory numbers to the line group.
- 7 To modify the order in which the directory numbers in the group should appear while the telephone system is hunting for an available line, select a directory number. Click the up and down arrows at the right of the list to move the selected number up or down. The closer the number is to the top of the list, the earlier it appears in the hunt sequence.
- 8 Repeat step 0 as needed for the remaining directory numbers you want to move.
- 9 To save the line group definition, click **Save**.

To create the Hunt List:

The following procedure defines a hunt list based on the line group you have just defined.

- 1 On the Call Routing menu, point to **Route/Hunt**, and then click **Hunt List**.
- 2 Click **Add New**.
- 3 In the Name field, type a descriptive name (such as MiCollab AM) for the hunt list.
- 4 In the Cisco Unified Communications Manager Group list, select the group containing the telephone system you are integrating with MiCollab AM. The designation of this group varies from one site to another.
- 5 Select the **Enable this Hunt List** check box, and then click **Save**.
- 6 Click **Add Line Group** to display the Hunt List Detail Configuration form.
- 7 From the Line Group list, select the line group that you defined in the previous procedure.
- 8 To add the line group to the hunt list Click **Save**, and then click **OK**.
- 9 In the Hunt List Configuration form, click **Reset**.

To create the Hunt Pilot:

The following procedure assigns a pilot number to the hunt list you have created.

- 1 On the Call Routing menu, point to **Route/Hunt**, and then click **Hunt Pilot**.
- 2 Click **Add New**.
- 3 In the Hunt Pilot box, type the number that subscribers should dial within the system to log on to their subscriber mailboxes (the internal logon number).
- 4 In the Description box, type a descriptive label (such as MiCollab AM) for the hunt pilot.
- 5 In the Hunt List box, select the hunt list that you created in the previous procedure.
- 6 Clear the **Provide Outside Dial Tone** check box.
- 7 Confirm that the **Connected Line ID Presentation** field is set to Default or Allowed.
- 8 To save the hunt pilot definition, click **Save**.

Programming System-Wide Settings for Voice Mail

Use the following three procedures to configure voice mail and MWI settings that apply to all subscribers.

To create the Voice Mail Pilot port:

The following procedure associates the hunt pilot you have defined with a voice mail system such as MiCollab AM.

- 1 Select **Advanced Features** > **Voice Mail**, and then select **Voice Mail Pilot**.
- 2 Click **Add New**.
- 3 In the Voice Mail Pilot Number box, type the number you assigned to the hunt pilot in step 3 of the previous procedure.
- 4 In the Calling Search Space list, select the appropriate space. This value varies from one site to another.
- 5 To save the voice mail pilot port, click **Save**.

To create the Voice Mail Profile:

The following procedure defines the voice mail pilot port you have created as the forwarding destination for unanswered calls in the telephone system.

- 1 Select **Advanced Features** > **Voice Mail**, and then select **Voice Mail Profile**.
- 2 Click **Add New**.
- 3 In the Voice Mail Profile Name box, type a descriptive label (such as MiCollab AM) for the new profile.
- 4 From the Voice Mail Pilot list, select the voice mail pilot port you created in the previous procedure.
- 5 To save the voice mail profile, click **Save**.

To create MWI Clear and Set directory numbers:

MWI operations in Cisco Unified Communications Manager involve two directory numbers, one each for the clear and set actions. The following procedure creates these directory numbers.

- 1 Select **Advanced Features** > **Voice Mail**, and then select **Message Waiting**.
- 2 Click **Add New**.
- 3 In the Message Waiting Number box on the Message Waiting Configuration form, type the directory number to be used to clear MWIs.
- 4 In the Description box, type **MWI Clear**.
- 5 In the Message Waiting Indicator group, click **Off**.
- 6 From the Calling Search Space list, select the search space containing the telephones to which this number should apply.
- 7 Click **Save**, and then click **Add New** again.

- 8 In the Message Waiting Number box, type the directory number to be used to set MWIs.
- 9 In the Description box, type **MWI Set**.
- 10 In the Message Waiting Indicator group, click **ON**.
- 11 From the Calling Search Space list, select the same search space that you selected in step 6.
- 12 Click **Save**.

Programming Subscriber Telephones for Voice Mail

The following procedure associates a subscriber telephone with the voice mail profile you have created. The subscriber telephone inherits the voice mail number from the profile.

To program subscriber telephones for voice mail:

- 1 On the Device menu, click **Phone**.
- 2 Search for and select the telephone you want to configure.
- 3 From the Directory Numbers list, select the number you want to associate with the selected telephone.
- 4 From the Voice Mail Profile list, select the voice mail profile you created in the procedure To create the Voice Mail Profile.
- 5 Select **Forward Busy Internal**, **Forward Busy External**, **Forward No Answer Internal**, and **Forward No Answer External**, and then click **Save**.
- 6 Repeat steps 2 through 5 for the remaining subscriber telephones you want to program.

Programming an SRST Router to Support Failover (Optional)

If your system includes a Cisco router that supports Survivable Remote Site Telephony (SRST) coverage, you can set your telephone system to hand over control of its voice ports (fail over) to a network router configured for SRST. The procedures in this section provide an overview of the tasks involved in configuring the telephone system to fail over to the SRST router.

To set the voice ports on the Unified CM platform to fail over to the router, you must create a named reference to the router on the Unified CM platform and map the ports to hand control over to it, as the following procedures describe.

NOTE For information on configuring failover between different Unified CM platforms in a cluster, refer to the Cisco documentation.

To define a named SRST reference on the Unified CM platform:

- 1 In a web browser, open the **Cisco Unified CM Administration** home page and log in.

- 2 From the **System** menu, select **SRST**.
- 3 On the **Find and List SRST References** page, click **Add New**.
- 4 In the **Name** box, type a recognizable name for the new reference.
- 5 In the **Port** box, accept the default port number of 2000 or type another valid Ethernet port number on the SRST router.
- 6 In the **IP Address** box, type the IP address of the SRST router.
- 7 In the **SIP Port** box, specify a valid SIP port for the SRST gateway to use. This port number can be either the default value of 5060 or a different SIP port number.
- 8 In the **SRST Certificate Provider Port** box, type a port number at which Unified CM can retrieve the router's security certificate.
- 9 If the router supports Secure Sockets Layer (SSL) and security certificates, select **Is SRST Secure?**
- 10 Click **Save** to save the reference.

To prepare the voice ports on the Unified CM platform to fail over to the SRST router:

- 1 From the System menu, select **Device Pool**.
- 2 On the **Find and List Device Pools** page, use the search form to locate and list the device pools containing the voice ports that should fail over to the router. By clicking **Find** without specifying any search criteria lists all available device pools.
- 3 In the list of available device pools, click the name of the pool that contains the voice ports you want to fail over to the router.
- 4 From the SRST Reference list on the **Device Pool Configuration** page, select the name of the reference you created in the previous procedure.
- 5 Click **Save** to save your changes.

Programming the Router:

After configuring failover on the Unified CM platform, you must perform the following configuration tasks on the router:

- Specify the IP address and port of the router, using the same information you used to define the SRST reference on the Unified CM platform.
- Set the maximum number of telephones that can register with the router.
- Set the maximum number of directory numbers (DNs) that can register with the router. If MiCollab AM is configured for supervised (T-type) transfers, these DNs must support dual-line operation.
- Deactivate call waiting.
- Define the destination DN for the voice mail button on extension sets (which must be the pilot DN of the MiCollab AM hunt group).

- Configure all extensions to forward to the MiCollab AM pilot number when busy or ringing without answer.
- Build the MiCollab AM hunt group using the alias command. Assign one preference number to each line number to set its priority in the hunt group.
- If MiCollab AM is configured for T-type transfers, set the router for full-consult transfer mode.

Network Configuration:

- In addition, you must also ensure that the following is configured on your network:
- On the network where you will attach voice ports, you must have a DHCP server with Option 150 configured to point to the TFTP location for the ports to download configuration files from Cisco Call Manager.
- On MiCollab AM, you must configure the Option number for TFTP access. The default is 150. You must also enable Auto Configuration to allow for queries to the TFTP server.

The following example shows how the series of Cisco IOS commands might look as you complete these tasks.

NOTE The specific line numbers, DNs, and other identifiers in the example may be different in your system. Also, the maximum allowable number of telephones and DNs vary depending on the model of router you have installed.

```
call-manager-fallback
ip source-address 172.16.1.2 port 2000
max-ephones 96
max-dn 200 dual-line
huntstop channel
voicemail 4500
call-forward busy 4500
call-forward noan 4500 timeout 10
alias 1 4500 to 4501 preference 1
alias 2 4500 to 4502 preference 2
alias 3 4500 to 4503 preference 3
alias 4 4500 to 4504 preference 4
alias 5 4500 to 4505 preference 5
alias 6 4500 to 4506 preference 6
alias 7 4500 to 4507 preference 7
alias 8 4500 to 4508 preference 8
transfer-system full-consult
exit
```

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 existing 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 the Telephony Server with the Telephone System**, in the online help.

Configuring MiCollab AM for the Integration During Initial Installation

To configure MiCollab AM for 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** dropdown list, select **Cisco**.
 - d From the **Model** dropdown list, select **Unified Communications Manager**.
 - e From the **Integration Type** dropdown list, select **Skinny Client Control Protocol (SCCP)**.
- 2 Click **Next**. The **Board Options** dialog box appears.

- a From the **Manufacturer** dropdown list, select **Cisco**.
 - b From the **Model** dropdown list, select **IP 7940 Phone Emulation (Skinny)**.
 - c In the **Name** field, the name for this board is automatically generated. Enter a new name if necessary.
 - d From the **Protocol** dropdown list, select **Skinny 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**.
- 3 Click **OK**. The **Switch Options** dialog box appears.
 - 4 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*.

- 5 Click **OK**. The **Integration Options** dialog box appears.
- 6 In the **Integration Options** dialog box, configure the options as follows:
 - a In the **Local Integration Settings** section, select the **Required Parameters** view, and configure the following parameters:

Table 5. Required Parameters View – Integration Options

Field	Value
PBX IP Address or Computer Name	Enter the IP address or the fully qualified domain name (FQDN) of the Unified CM server.
Local IP Address to bind on	Type the IP address of the NIC on the MiCollab AM platform that should support the integration.

NOTE If the MiCollab AM platform only has one NIC, leave the Local IP Address to bind on field blank.

Set MWI Dialing Template	Enter the set and clear message waiting DN. These DN must match the Message Waiting Indicator On and Message Waiting Indicator Off settings from Unified CM.
Clear MWI Dialing Template	

- b** In the **Local Integration Settings** section, select the **Integration Specific Parameters** view and configure the following option:

Table 6. Required Parameters for Integration Options

Field	Value
Type of Call Progress to use for External Calls	<p>Set the values depending on the gateway used for the integration as follows:</p> <ul style="list-style-type: none"> • Digital: Select Digital if the gateway supports call progress through to the endpoint. • Media: Select Media if the gateway reports early that the call is connected, such as before the phone rings or while the phone is ringing.
Use Line Extensions for port registration	<ul style="list-style-type: none"> • Check this box if the system is using the MiCollab AM extension numbers as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM) • Uncheck this box if your system is using: <ul style="list-style-type: none"> • MiCollab AM serial number as a MAC address. • Simulated MiCollab AM serial number as a MAC address. <p>For more information, see the Programming the Telephone System section.</p>
Serial Number for port registration	<ul style="list-style-type: none"> • Leave blank if your system is using: <ul style="list-style-type: none"> • MiCollab AM extension numbers as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM) • MiCollab AM serial number as a MAC address. • Enter the serial number if your system is using a simulated MiCollab AM serial number as a MAC address.

- 7** Click **OK**. The **Switch Section Options** dialog box appears.
- 8** In the **Switch Section Options** dialog box, configure the following options:
- a** In the **Local Integration Settings** section, select the **Required Parameters** view.
 - b** In the **Incoming Hunt Mode** field, enter the pilot number you configured previously in the [Programming the Hunt Group for MiCollab AM Ports](#) section.
 - c** In the **Hunt Group Access Code** field, type the code that was programmed in the telephone system.
 - d** Click **OK**.

- 9 Continue through and complete the configuration. At the end of the configuration, a confirmation dialog box appears. Click **OK**.
- 10 If **MiCollab AM Configuration** does not open automatically after the configuration completes, open **MiCollab AM Configuration**, and select the **Lines** tab.
- 11 In the table from the **Lines** tab, enter the extension numbers in which they appear. Verify that the line numbers match the hunt group member DN's defined in Unified CM. The last line is reserved by MiCollab AM automatically for MWI operation and therefore must not be selected for callouts.

For information on configuring callout settings, see the topic *Configuring Callout Settings*, in the online help system.
- 12 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** dropdown list, select **Cisco**.
 - b From the **Model** dropdown list, select **IP 7940 Phone Emulation (Skinny)**.
 - c In the **Name** field, the name for this board is automatically generated. Enter a new name if necessary.
 - d From the **Protocol** dropdown list, select **Skinny 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.
 - a From the **Manufacturer** dropdown list, select **Cisco**.
 - b From the **Model** dropdown list, select **Unified Communications Manager**.
 - c From the **Integration Type** dropdown list, select **Skinny Client Control Protocol (SCCP)**.
- 5 Click **OK**. The **Switch Options** dialog box appears.
- 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.

8 In the **Integration Options** dialog box, configure the options as follows:

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

Table 7. Required Parameters View – Integration Options

Field	Value
PBX IP Address or Computer Name	Enter the IP address or the fully qualified domain name (FQDN) of the Unified CM server.
Local IP Address to bind on	Type the IP address of the NIC on the MiCollab AM platform that should support the integration. NOTE If the MiCollab AM platform only has one NIC, leave the Local IP Address to bind on field blank.
Set MWI Dialing Template	Enter the set and clear message waiting DN. These DN must match the Message Waiting Indicator On and Message Waiting Indicator Off settings from Unified CM.
Clear MWI Dialing Template	

- b In the **Local Integration Settings** section, select the **Integration Specific Parameters** view and configure the following option:

Table 8. Required Parameters for Integration Options

Field	Value
Type of Call Progress to use for External Calls	Set the values depending on the gateway used for the integration as follows: <ul style="list-style-type: none">• Digital: Select Digital if the gateway supports call progress through to the endpoint.• Media: Select Media if the gateway reports early that the call is connected, such as before the phone rings or while the phone is ringing.
Use Line Extensions for port registration	<ul style="list-style-type: none">• Check this box if the system is using the MiCollab AM extension numbers as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM)• Uncheck this box if your system is using:<ul style="list-style-type: none">• MiCollab AM serial number as a MAC address.

	<ul style="list-style-type: none"> • Simulated MiCollab AM serial number as a MAC address. <p>For more information, see the Programming the Telephone System section.</p>
Serial Number for port registration	<ul style="list-style-type: none"> • Leave blank if your system is using: <ul style="list-style-type: none"> • MiCollab AM extension numbers as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM) • MiCollab AM serial number as a MAC address. • Enter the serial number if your system is using a simulated MiCollab AM serial number as a MAC address.

- 9 Click **OK**. The **Switch Section Options** dialog box appears.
- 10 In the **Switch Section Options** dialog box, configure the following options:
 - a In the **Local Integration Settings** section, select the **Required Parameters** view.
 - b In the **Incoming Hunt Mode** field, enter the pilot number you configured previously in the [Programming the Hunt Group for MiCollab AM Ports](#) section.
 - c In the **Hunt Group Access Code** field, type the code that was programmed in the telephone system.
 - d Click **OK**.
- 11 In **MiCollab AM Configuration**, verify that the telephone system is properly added and configured in the **Switches**, **Switch Sections**, and **Integrations** tabs.
- 12 Select the **Lines** tab.
- 13 In the table from the **Lines** tab, enter the extension numbers on the Lines in which they appear. Verify that the line numbers match the hunt group member DNs defined in the telephone system programming.

For information on configuring callout settings, see the topic *Configuring Callout Settings*, in the online help system.
- 14 Click **OK** to save all changes.

Changing the Network Binding Order on the MiCollab AM Platform

MiCollab AM uses the primary (public) network interface card (NIC) in the platform. It must be the first network connection in the network binding order. 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.

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 document ensure that the binding order is correct when you set up the integration. However, 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 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 / 2019

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 9. 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

Appendix A — Calculating the Simulated MAC Addresses for MiCollab AM Ports by MiCollab AM Serial Number

IMPORTANT The following address scheme for creating MAC addresses for MiCollab AM ports connected to a Unified CM is archaic and should be used only if you are upgrading MiCollab AM from a previous version of software and do not have the capability of changing the telephone programming of the Unified CM.

If you are installing MiCollab AM for the first time or integrating with a Cisco Unified Communication Manager telephone system for the first time, refer to the next section, [Creating the Simulated MAC Addresses for MiCollab AM](#).

Unified CM identifies the IP telephones connected to it by their unique MAC addresses. Because MiCollab AM reserves ports for the hunt group by simulating multiple IP telephones, it needs to be able to pass multiple MAC addresses to Unified CM.

Thus, MiCollab AM must be able to produce unique, reproducible simulated MAC addresses so that it will not encounter any conflicts with MAC addresses that Unified CM is already using elsewhere. MiCollab AM uses the following algorithm to produce these MAC addresses.

A MAC address is composed of 12 hex digits. The MiCollab AM-simulated MAC addresses are composed of 3 portions (11222222333) as follows:

- The first portion is the most significant two digits of the MAC address and is always 00
- The second portion (the next seven digits) is comprised of the last seven digits of the System Server serial number. The serial number is the license number of MiCollab AM and is found on the **Main** tab of the MiCollab AM Configuration utility.
- The third portion is the least significant three digits of the MAC address and is the line or port number in **hexadecimal** notation, starting at zero.

NOTE In systems running more than one integration, the Unified CM ports are numbered separately; the first Unified CM port is always numbered zero.

For example:

Line 1 of a MiCollab AM server with serial number 4147152401150, has a MAC address of 002401150000, the line 2 MAC address is 002401150001, and so on.

For line 12 of a MiCollab AM server with serial number 4121480394330, the MAC address is 00039433000B. Use these numbers in the following section, *Programming the MiCollab AM Ports*, to configure the MiCollab AM ports from the Unified CM point of view.

IMPORTANT You can configure MiCollab AM to use a simulated serial number as well. This allows you to continue to use this method of defining MAC addresses in Unified CM when connecting to multiple Call Servers.

To use the *Serial Number for Port Registration* feature you must enter a 13-digit serial number in the MiCollab AM Integration Specific Parameters of the Cisco Unified Communications Manager SCCP integration. See the section, [Configuring MiCollab AM](#) for more information on this feature.