

# MiCollab Advanced Messaging Cisco Unified Communications Manager Express SCCP Integration Technical Note

For version 9.1 and above

## Notice

The information contained in this document is believed to be accurate in all respects but is not warranted by Mitel Networks™ Corporation (MITEL®). Mitel makes no warranty of any kind with regards to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The information is subject to change without notice and should not be construed in any way as a commitment by Mitel or any of its affiliates or subsidiaries. Mitel and its affiliates and subsidiaries assume no responsibility for any errors or omissions in this document. Revisions of this document or new editions of it may be issued to incorporate such changes.

No part of this document can be reproduced or transmitted in any form or by any means - electronic or mechanical - for any purpose without written permission from Mitel Networks Corporation.

## Trademarks

The trademarks, service marks, logos and graphics (collectively "Trademarks") appearing on Mitel's Internet sites or in its publications are registered and unregistered trademarks of Mitel Networks Corporation (MNC) or its subsidiaries (collectively "Mitel") or others. Use of the Trademarks is prohibited without the express consent from Mitel. Please contact our legal department at [legal@mitel.com](mailto:legal@mitel.com) for additional information. For a list of the worldwide Mitel Networks Corporation registered trademarks, please refer to the website: <http://www.mitel.com/trademarks>.

© Copyright 2020, Mitel Networks Corporation

All rights reserved

# Contents

<b>Preface</b>	<b>4</b>
References	4
Documentation	4
Documentation Updates	5
Help	5
Document Conventions	5
Features Supported by This Integration	6
<b>Critical Application Considerations</b>	<b>9</b>
<b>Installation Requirements</b>	<b>11</b>
Telephone System Requirements	11
MiCollab AM Requirements	11
<b>Programming the Telephone System</b>	<b>12</b>
Creating the Simulated MAC Addresses for MiCollab AM version 9.1	12
Programming the MiCollab AM Ports	13
Programming System-Wide Settings for Voice Mail	13
Defining the Voice Mail Access Number	13
Creating MWI Clear and Set Numbers	14
Programming Subscriber Telephones for Voice Mail	14
<b>Configuring MiCollab AM</b>	<b>15</b>
Configuring MiCollab AM for the Integration During Initial Installation	15
Configuring Existing MiCollab AM for the Integration	18
<b>Changing the Network Binding Order on the MiCollab AM Platform</b>	<b>21</b>
Windows Server 2012 R2	21
Windows Server 2016 / 2019	22
<b>Configuring Quality of Service (QoS)</b>	<b>23</b>
<b>Appendix A: Calculating the Simulated MAC Addresses for MiCollab AM Ports by MiCollab AM Serial Number</b>	<b>24</b>

# 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) Express and the Skinny Client Control Protocol (SCCP).

This document describes how to integrate MiCollab AM with a Cisco Unified Communications Manager Express 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 Express.

The Unified CM Express is the software-based call-processing component of the Cisco IP telephony solution for small organizations or branch offices. SCCP is the Cisco call control signaling protocol used by Unified CM Express to set up calls between the Unified Communications Manager Express router and other devices, such as IP telephones and MiCollab AM. SCCP registers handsets and gateways with Unified CM Express, 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 Express 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 Express.

## 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](http://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 Express and SCCP, refer to the appropriate Cisco documentation.

## Features Supported by This Integration

The following tables list the features supported using the Cisco Unified Communications Manager Express 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 CM Express 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 Detection	Yes	
Internal calling party ID for reply	Yes	
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 forwarded to MiCollab AM.
3. See the note regarding blind transfers in the next [Critical Application Considerations](#) section.
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.

- This integration supports up to 16 voice ports.
- 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 Express 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 doesn't satisfy the dial plan criteria may fail.

Note also that in such cases, Unified CM Express may hold the line active until it finally drops the caller. If Unified CM Express has failed over to a Survivable Remote Site Telephony (SRST) router, such transfers cause MiCollab AM line ports to become out of service.

- Unified CM Express performs its own call progress detection, and MiCollab AM relies on that call progress detection for all calls that it receives through Unified CM Express.

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](http://www.cisco.com), for information on how to adjust Unified CM call progress detection.

- MiCollab AM supports G.729a with support for annex b on the incoming audio stream only. MiCollab AM does not transmit annex b packets.
- MiCollab AM automatically offers the G.729a audio format to the Cisco Communications Manager. Configuration of the G.729a protocol is automatic; it cannot be configured manually.
- Unified CM Express begins each call with ringing, then changes call progress after determining the actual condition of the line.
- 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.
- In each switch section created for Unified Communications Manager Express on the MiCollab AM server, the Maximum MWI Callouts parameter must be set to 1. Unified Communications Manager Express does not support simultaneous MWI operation.
- Non-numeric DTMF tones cannot be used as any character in the station number. The maximum length of a station number is ten digits.

- 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 line priority levels in a hunt group is limited to ten on the router, only ten lines can be active during failover.

- 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. CX 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](#).
- 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 9.1 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](http://www.cisco.com), for a complete list of current part numbers for the following products:

- Cisco IOS router platform (refer to the Cisco Feature Navigator on the web site to determine which platforms support the IOS features your organization plans to use)
- Cisco Unified Communications Manager Express software version 4.0(3) (release 12.4(4)XC5)
- If you are using an SRST router, version 3.3 of the SRST software

## MiCollab AM Requirements

- MiCollab AM software version 9.1
- One or two 10 MB, 100 MB, or 1000 MB (gigabit) network interface cards with cables
- Mitel software key diskette or feature file with Cisco Unified Communications Manager SCCP Integration enabled and one Virtual license enabled for each Cisco port

# Programming the Telephone System

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

## Creating the Simulated MAC Addresses for MiCollab AM version 9.1

Beginning with MiCollab AM version 9.1 you can create simulated MAC addresses using the extension numbers of the MiCollab AM ports. Using this method allows you to connect Unified CM Express extensions to any Call Server in the system without reference to the MiCollab AM serial number. Move extension numbers easily 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** Refer to [Appendix A: Calculating the Simulated MAC Addresses for MiCollab AM Ports by 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. MiCollab AM extension numbers

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

Define the station ports in the integration as 7940-type telephones. Associate each port with the MAC address that MiCollab AM assigns to it. Set the transfer mode for each port to **consult** and assign directory numbers to buttons 1 and 2 to support supervised (T-type) transfers. Finally, set each MiCollab AM port to forward to the next MiCollab AM port if it is busy.

The following text demonstrates how to configure MiCollab AM ports from the Unified Communications Manager Express command line, using the **ephone** and **ephone-dn** programming modes. In this example, the port configured is the first integrated port on both the telephone system and the Call Server, and it is being assigned extension numbers 8001 and 8011.

```
ephone-dn 001
number 8001
name MiCollab AM-0001
call-forward busy 8002
transfer-mode consult
exit

ephone-dn 011
number 8011

ephone 001
mac-address 0024.0115.0000
type 7940
button 1:001 2:011
exit
```

## Programming System-Wide Settings for Voice Mail

Configure voice mail and MWI settings that will apply to all subscribers, as described in the following two topics.

### Defining the Voice Mail Access Number

Enter **telephony-service** programming mode and use the **voicemail** command to assign the first MiCollab AM port (which functions as a pilot number) to the Messages button on each subscriber's telephone, as shown in the following example.

```
telephony-service
voicemail 8001
exit
```

## Creating MWI Clear and Set Numbers

MWI operations in Cisco Unified Communications Manager Express involve two extension numbers assigned to the clear and set actions. To configure those actions on your telephone system, define the two extension numbers as the primary (MWI set) and secondary (MWI clear) extensions assigned to a single directory number.

Define the directory number with a value as far away from the system's active ports and extensions as possible, and include the **mw i on-off** command in its definition, as shown in the following example.

**NOTE** This example shows the use of a fourth-column DTMF tone (A) in the MWI clear and set numbers. This can help prevent conflicts with actual extension numbers, but it is not required.

```
ephone-dn 999
number A001 secondary A002
mw i on-off
exit
```

## Programming Subscriber Telephones for Voice Mail

Program the directory number for each subscriber extension in the telephone system to forward calls to the MiCollab AM pilot number when busy or unanswered. The following example shows how to program a subscriber extension to forward to MiCollab AM, using the *call-forward* command in *ephone-dn* programming mode.

```
ephone-dn 100
call-forward busy 8001
call-forward noan 8001 timeout 10
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"> <li>• <b>Digital:</b> Select Digital if the gateway supports call progress through to the endpoint.</li> <li>• <b>Media:</b> Select Media if the gateway reports early that the call is connected, such as before the phone rings or while the phone is ringing.</li> </ul>
Use Line Extensions for port registration	<ul style="list-style-type: none"> <li>• <b>Check this box</b> if the system is using the <b>MiCollab AM extension numbers</b> as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM)</li> <li>• <b>Uncheck this box</b> if your system is using: <ul style="list-style-type: none"> <li>• <b>MiCollab AM serial number</b> as a MAC address.</li> <li>• <b>Simulated MiCollab AM serial number</b> as a MAC address.</li> </ul> <p>For more information, see the <a href="#">Programming the Telephone System</a> section.</p> </li> </ul>
Serial Number for port registration	<ul style="list-style-type: none"> <li>• <b>Leave blank</b> if your system is using: <ul style="list-style-type: none"> <li>• <b>MiCollab AM extension numbers</b> as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM)</li> <li>• <b>MiCollab AM serial number</b> as a MAC address.</li> </ul> </li> <li>• <b>Enter the serial number</b> if your system is using a <b>simulated MiCollab AM serial number</b> as a MAC address.</li> </ul>

- 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 Subscriber Telephones for Voice Mail](#) section. This is the internal number subscribers dial to reach MiCollab AM.
- 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 existing 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 **Switch** 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.
	<b>NOTE</b> 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 DNs 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"><li>• <b>Digital:</b> Select Digital if the gateway supports call progress through to the endpoint.</li><li>• <b>Media:</b> Select Media if the gateway reports early that the call is connected, such as before the phone rings or while the phone is ringing.</li></ul>
Use Line Extensions for port registration	• <b>Check this box</b> if the system is using the <b>MiCollab AM extension numbers</b> as a MAC address of the ports in the Unified CM Express. (Preferred Method for MiCollab AM)

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

**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 Subscriber Telephones for Voice Mail](#) section. This is the internal number subscribers dial to reach MiCollab AM.
- 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 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 <b>Server</b> 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 version 9.1 for the first time or integrating with a Cisco Unified Communication Manager telephone system for the first time, refer to the [Creating the Simulated MAC Addresses for MiCollab AM version 9.1](#) section.

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 [Programming the MiCollab AM Ports](#) section 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 [Configuring MiCollab AM](#) section for more information on this feature.

**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 [Programming the MiCollab AM Ports](#) section to configure the MiCollab AM ports from the Unified CM Express 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 Express 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 [Configuring MiCollab AM](#) section for more information on this feature.