

**MiCollab Advanced Messaging
Dialogic DMG2000 series for
Avaya/Nortel Meridian or CS1000
Integration Technical Note**

For version 9.1 and above

Notice

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Contents

Preface	4
References	4
Documentation	4
Documentation Updates	5
Help	5
Document Conventions	5
Features Supported by This Integration	7
Critical Application Considerations	10
DMG/MiCollab AM Related Critical Application Considerations	10
Telephone System/DMG Related Critical Application Considerations	11
Installation Requirements	13
Telephone System Requirements	13
Dialogic DMG2000 series Media Gateway Requirements	13
MiCollab AM Requirements	14
Programming the Telephone System	15
Allowing MiCollab AM Startup and Shutdown	15
Programming the Dialogic DMG2000 series	17
Configuring the TCP/IP Address	17
Configuring MiCollab AM	20
Configuring MiCollab AM for the Integration During Initial Installation	20
Configuring Existing MiCollab AM for the Integration	23
Testing the TCP/IP Connection	27
Changing the Network Binding Order on the MiCollab AM Platform	28
Windows Server 2012 R2	28
Windows Server 2016 / 2019	29
Configuring Quality of Service (QoS)	30

Preface

This Integration Technical Note (ITN) is written for dealers who are experienced with MiCollab Advanced Messaging (MiCollab AM) and are familiar with its procedures and terminology. This document assumes that you are familiar with the features and programming of the Avaya/Nortel Meridian or CS1000 telephone system and the Dialogic 2000 Media Gateway.

This document describes how to integrate MiCollab AM with an Avaya/Nortel telephone system through the Dialogic 2000 Media Gateway, using the Session Initiation Protocol (SIP) integration. This integration operates exclusively over a TCP/IP-based network; it uses no analog or digital voice telephony ports between the Dialogic 2000 Media Gateway and MiCollab AM, but passes voice communication and signaling information over the network. MiCollab AM can thus be located anywhere within the LAN or WAN.

Critical application considerations are documented, as well as installation and programming procedures necessary to integrate MiCollab AM with the Dialogic 2000 Media Gateway, referred to throughout this document as DMG.

The DMG2000 series E1/T1 integration consists of three major components: the telephone system, the Dialogic DMG2000 series, and MiCollab AM. Each Dialogic DMG2030 supports one E1 or T1 span of the telephone system and provides a network connection to MiCollab AM.

The DMG acts as a bridge between the telephone system and MiCollab AM. It converts the E1/T1 signaling of the telephone system into the SIP/RTP protocol, and then delivers it to MiCollab AM through the network interface.

The DMG integration is a SIP trunk integration. The MiCollab AM ports are configured as SIP trunks and uses static SIP endpoints to communicate with the corresponding gateway endpoints of the DMG.

Calls are sent to MiCollab AM through the DMG, the data is matched with the ringing extension, and MiCollab AM answers with the appropriate dialog. Outgoing calls from MiCollab AM are routed through the DMG to the telephone system. Message waiting indicator (MWI) operation is also performed through the DMG.

This ITN documents the procedure for setting up the integration. The process consists of programming the telephone system, programming the DMG2000 series and configuring MiCollab AM.

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>
Spare Parts Documentation	<i>Dialogic DMG1008 Digital Media Gateway Installation and Replacement</i>
Spare Parts Documentation	<i>Dialogic DMG2000 Series Media Gateway Installation and Replacement</i>
External Resource at www.dialogic.com	<i>Dialogic® 1000 and 2000 Media Gateway Series Getting Started Guide</i>

External Resource at
www.dialogic.com

*Dialogic® Media Gateway Installation and Configuration Integration
Notes*

Online help

MiCollab AM online help system

Features Supported by This Integration

The following tables list the features supported using the Dialogic DMG2000 series for Avaya/Nortel Meridian or CS1000 SIP Trunk 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
Follow Me	Yes

Table 3. Integration Features Supported for Dialogic DMG 2000 for Avaya/Nortel Meridian or CS1000 SIP Trunk

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

Live record, integrated	No	Note 3
Live reply to sender	Yes	
Message notification callouts	Yes	
MWI, set/clear	Yes	
MWI, inband/outband	Outband	
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	
SRTP	No	Note 4
TLS	No	Note 4
Transfers, blind	Yes	
Transfers, confirmed	Yes	
Transfers, fully supervised	Yes	
Transfers, monitored	Yes	
Trunk ID for call routing	Yes	
Multiple Integrations	Yes	Note 5

NOTES

1. Only available when using supervised transfers
2. 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.
3. Live Record is not supported with this SIP integration.
4. MiCollab AM supports negotiation for SRTP media streams using the Secure RTP profile defined in RFC 3711 with the offer/answer model defined in RFC 3264. To enable SRTP, RTP, or both, see integration configuration options documentation for the switch. The default setting is RTP. Please note that MiCollab AM doesn't support RFC 5939 which is an extension of RFC 3264. Also, please note that SRTP has not been qualified for this integration, and no switch programming is available

for setting up SRTP on the switch side. However SRTP may be enabled as described above, and technical support will be available on a best effort basis.

5. See [Critical Application Considerations](#).

Critical Application Considerations

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

DMG/MiCollab AM Related Critical Application Considerations

- 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](#).
- If you make changes to the parameters on the **Integrations Options** dialog box of the Call Server, you must restart the Call Server to update the DMG configuration. The DMG is configured remotely, during startup of MiCollab AM.
- The network interface card (NIC) supporting the DMG integration must be a 100MB full duplex link or greater. The G.711 PCM codec requires approximately 80kbps for one-way conversation, or 160kbps per MiCollab AM port.
- Use the G.711 protocol is used to communicate with the DMG. MiCollab AM does not support the G.729AB protocol.
- Dialogic software assigns any Dialogic linecards in the system to the first ports in the system. If MiCollab AM is configured for both Dialogic cards and a TCP/IP integration, the Dialogic cards are automatically assigned to the first ports. If this configuration is unacceptable, you can manually re-assign ports using the Boards tab of the MiCollab AM Configuration utility.
- A unique name must be entered in the SIP Parser Qualifier String field for each integration supporting a DMG device. This is a required parameter in the MiCollab AM **Integrations Options** dialog box. If you configure the DMG with a FQDN (Fully Qualified Domain Name), enter the FQDN of the DMG device in the SIP Parser Qualifier String field. Otherwise, enter a unique name, such as DMG_1, that distinguishes SIP messages generated by one DMG device from any other DMG device in the system. This allows MiCollab AM to handle incoming calls associated with each DMG device correctly.
- Configure the MiCollab AM **Incoming Hunt Mode** in the **Switch Section Options** dialog box. The hunt mode must match the type of hunting provided by the IP PBX. This helps to alleviate any glare conditions between the IP PBX and the Call Server. The default mode is Terminal.
- 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.

- Assign each DMG to a separate integration in MiCollab AM. MiCollab AM must have a unique integration configured for each Dialogic DMG2000 series.
- Each DMG must be running version firmware version 6.0 SU9 or later. Previous versions of firmware are not supported.
- 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)
 - SIP timers for Aastra EETS integrations are incompatible with other SIP integrations. Thus, it is not possible to have an EETS integration with any other SIP integration on the Call Server.
- The MiCollab AM **Integration Options** parameter, **Validate Remote Hosts for Media** validates each incoming audio packet and accepts it only if it is sent from a valid endpoint. The parameter is disabled by default. Enabling this parameter causes MiCollab AM to reject RTP packets from invalid endpoints, rejects MWI packets that timeout after a specified number of times, and overcomes port lockups when callers hang up while MiCollab AM is performing a blind transfer.

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

Telephone System/DMG Related Critical Application Considerations

- Non-numeric DTMF tones cannot be used as any character in the station number, nor can zero be used as a leading number of the extension. The maximum length of a station number is 10 digits.
- Telephone numbers in the name fields of either subscriber stations or MiCollab AM ports prevent forwarded calls to MiCollab AM from integrating correctly.
- If you plan to use supervised transfers (T-type), we recommend installing the Music on Hold (MOH) feature to assure callers of proper call handling and system operation. Otherwise, callers being transferred to a station by MiCollab AM experience a period of silence and might misunderstand what is happening to their calls.
- The telephone system allows a maximum of 30 hunting steps in each hunt group.
- Overflow from an operator goes to a specific extension number only; it does not overflow past the lead extension number of the MiCollab AM hunt group.

- PBX stations that support the Dialogic DMG cannot be configured as automatic call distribution (ACD) stations. DMG ports must be assigned to a hunt group.
- To use camp-on or callback in the telephone system, set hunting denied (HTD) in the station class of service.

Installation Requirements

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

Telephone System Requirements

- Avaya/Nortel CS1000 release 7.6 or earlier, or Meridian version 1011 release 14.0 or later
- North America Premium Network Services L3B feature set, including the following specific feature packages:
 - Feature Package 316 (Q.sig Supplementary Service)
 - Feature Package 305 (Q.sig General Functional Protocol)
 - Feature Package 263 (Q.sig Interface)
 - Feature Package 202 (International Primary Rate Access)
 - Feature Package 167 (International Gateway)
 - Feature Package 161 (International ISDN Supplementary Features)
 - Feature Package 154 (2.0 Mbit Primary Rate Interface)
 - Feature Package 145 (Integrated Services Digital Network)
 - Feature Package 129 (2.0 Mbit Digital Trunk Interface)
 - Feature Package 75 (Digital Trunk Interface)
 - Feature Package 19 (Digit Display)
- One 2.0 Mbit E1 PRI interface card (part no. NTBK50AA, Release 10) or one 1.5 Mbit T1 TMDI interface card (part no. NTRB21AC, Release 2)
- One 120Ω Cat5e or better cable with RJ45 connector for each E1 or T1 span involved in the integration

Dialogic DMG2000 series Media Gateway Requirements

- One Avaya/Nortel E1 or T1 span for each DMG connection. Table 3 provides port capacities for each DMG2000 series model.

Table 4. DMG2000 series E1/T1 span and port capacities

DMG2000 series model	No. T1 or E1 spans	No. of Ports
DMG2030DTIQ	1	30
DMG2060DTIQ	2	60
DMG2120DTIQ	4	120

- The Dialogic DMG2000 series must be running DMG firmware version 6.0 SU9 or later. To upgrade the DMG, visit the Mitel Connect website *Tech Downloads* section: connect.mitel.com/connect.
- Consult the Mitel Connect web site for current Dialogic DMG software upgrades and parser file updates

MiCollab AM Requirements

- MiCollab AM version 9.1
- Mitel software key diskette or feature file with the Dialogic Media Gateway integration enabled and one Virtual SIP and RTP license enabled for each port involved in the integration.
- One or two 100 MB, or 1000 MB (gigabit) network interface cards (NIC) with cables. The NIC used to communicate with the DMG must be a 100MB full duplex card or greater and must be separate and distinct from other network cards in the system

Programming the Telephone System

Refer to the Dialogic website for information on programming the Avaya/Nortel for operation with the DMG2000 series. www.dialogic.com.

Follow the additional recommendations and programming examples in this section to program the Avaya/Nortel PBX for integration with DMG2000 series.

The installing technician should be familiar with programming the telephone system. For detailed information on programming and installing the telephone system, refer to the Meridian Integrated Services Network, *Features Description & Operation Manual*. The Northern Telecom Practice (NTP) library also provides additional information.

Allowing MiCollab AM Startup and Shutdown

During start up and shut down MiCollab AM opens or closes the lines connected to it. The telephone system may detect these changes in status as malfunctions and shut down the E1 or T1 span. The system administrator must then reset the span from the telephone system to get the integration running again.

To prevent this from happening, use the change request (REQ CHG) within overlay module 73 (LD 73) to deactivate the error counters that the changes in line status would trigger. The following table shows these counters and their appropriate values for this integration.

Table 5. MiCollab AM Startup and Shutdown

Prompt	Responses	Comments
TYPE	DDB	
TRSH	0	
BIPC	0	Bipolar Violation Count Threshold set to zero
LFAC	0	Loss of Frame Alignment Counter set to zero

E1 Spans

Each type of span requires specific programming to allow interruptions in the availability of MiCollab AM. For E1 spans, use the change request (REQ CHG) within overlay module 73 (LD 73) and set error checking as shown in the following table.

IMPORTANT Do not enter this request if you are using T1 spans in your integration.

Table 6. E1 Spans

Prompt	Responses	Comments
Type	PR12	Span type (E1-based ISDN PRI)
FEAT	LPT1	
LOOP	1	Loop Number
MFF	CRC	Cyclic Redundancy Check (CRC-4) format
ACRC	YES	Automatic reporting of CRC-4 errors
OOSC	0	Out-of-service counter disabled

T1 Spans

For T1 spans, you only need to respond to a single prompt after entering the change request within overlay module 60 (LD 60) as shown in the following table. Note that the card number shown in the table is provided as an example only; the T1 interface card does not need to be configured as card 2.

IMPORTANT Do not enter this request if you are using E1 spans in your integration.

Table 7. T1 Spans

Prompt	Response	Comments
DSYL	2	Yellow alarm processing disabled for card 2

NOTE For either E1 or T1 spans, you can optionally use the DROL prompt in overlay module 17 (LD 17) to reset the threshold counters every night.

Programming the Dialogic DMG2000 series

Follow the recommendations and programming examples in this section to program the Dialogic DMG2000 series through the DMG Web interface for integration with MiCollab AM. Consult the documentation that shipped with the DMG or go online to download the *Dialogic® 1000 and 2000 Media Gateway Series Getting Started Guide* and the *Dialogic® Media Gateway Installation and Configuration Integration Notes* for more information on programming the DMG.

The DMG ships with a default TCP/IP address and requires initial setup to communicate over the same LAN as MiCollab AM. This section assumes you will use the MiCollab AM Admin console of the Call Server to initialize the DMG for service with MiCollab AM.

IMPORTANT The Dialogic DMG2000 series must have a TCP/IP address that MiCollab AM can communicate with over the network. If you do not know this information, consult your network administrator for the correct address information required for installing both the DMG and MiCollab AM.

Configuring the TCP/IP Address

The initial programming mode of the DMG can be accessed in either of two ways—through the serial port on the rear panel of the DMG or through the DMG Web interface. Choose one of the following procedures to configure the IP address.

To configure the TCP/IP address through the serial port:

- 1 Connect the serial port of the DMG to a serial COM port of the MiCollab AM server with a DB9 serial cable.
- 2 Select **Start > Programs > Accessories > Communications > HyperTerminal**.
- 3 Enter a value such as DMG in the **New Connection** dialog box, and then click **OK**.
- 4 In the **Connect To** dialog box select the COM port to communicate to the DMG, and then click **OK**.
- 5 In the **COM port** dialog box configure the COM port to the following settings:
 - Baud Rate = 38400
 - Parity = None
 - Data Bits = 8
 - Stop Bits = 1
 - Hardware Flow Control = Off
- 6 Press the **Enter** key until the prompt PIMG> appears.

- 7 At the PIMG> prompt type *pwd*.
- 8 Type the default password, *lpodAdmin*, and then press **Enter**.
- 9 At the PIMG> prompt type *quickcfg*, and then press **Enter**. You are prompted to enter the following information:
- 10 Enter a new TCP/IP address in the Client IP address box.
- 11 Enter a new subnet mask in the Client Subnet Mask box.
- 12 Enter the TCP/IP address of the default network gateway router in the Default Network Gateway Address box.

NOTE The DMG must be restarted for the changes to take effect.

- 13 At the PIMG prompt> type *restart*. You should now be able to connect using the Web interface of the DMG through the LAN connection.
- 14 Proceed to the section, [Configuring MiCollab AM](#).

To configure the IP address through the Web Interface:

NOTE All DMGs have the same default TCP/IP address at initial startup. If you are installing more than one Dialogic DMG2000 series you **must** connect them to the network one at a time to avoid TCP/IP address conflicts

- 1 Connect the DMG to the LAN MiCollab AM is currently operating on.
- 2 You must temporarily change the TCP/IP address of the Call Server to access the DMG. The default IP address of the DMG is 10.12.13.74. Change the Call Server TCP/IP address so it communicates on the same subnet as the DMG. For example, 10.12.13.75.
- 3 Start the web browser on the Call Server, and then enter the following address: <http://10.12.13.74>.
- 4 When the **System Login** dialog box appears, enter the default user name, *admin*, and then enter the default password, *lpodAdmin*.
- 5 Click **OK**.
- 6 Select the **Configuration > IP** web page from the main menu. Change the unit's TCP/IP address from the default address by entering the new TCP/IP address in the Client TCP/IP address box.
- 7 Enter a new subnet mask in the Client Subnet Mask box.
- 8 Enter the TCP/IP address of the default network gateway router in the Default Network Gateway Address box.
- 9 Click the **Apply Changes** button to save the configuration in the database.
- 10 Click **Restart**, or select **System > Restart** from the main menu. When the Restart Web page appears, click **Restart Unit Now**.

NOTE The DMG **must** be restarted for the changes to take effect.

- 11 Change the temporary Call Server TCP/IP address back to the previous working TCP/IP address. You should now be able to connect to the DMG Web interface using the new IP address.

12 Proceed to the section, [Configuring MiCollab AM](#).

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 MiCollab AM 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 **Avaya / Nortel**.
 - d From the **Model** dropdown list, select **CS1000** or **Meridian 1**.
 - e From the **Integration Type** dropdown list, select **DMG E1** or **DMG T1**.
- 2 Click **Next**. The **Board Options** dialog box appears.

- a From the **Manufacturer** dropdown list, select **Virtual**.
 - b From the **Model** dropdown list, select **SIP STACK**.
 - c In the **Name** field, the name for this board is automatically generated. Enter a new name if necessary.
 - d From the **Protocol** dropdown list, select **SIP IP RTP**.
 - e In the **Number of Lines** field, enter the number of lines this board uses. The total number of lines is limited by the capacity of the board and the number of **Available Line Licenses**.
- 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 8. Required Parameters View – Integration Options

Field	Value
SIP Server Address	Enter the TCP/IP address or FQDN of the DMG device.
SIP Server Port	Enter the SIP port on which the DMG device is listening for SIP messages. The default value is 5060 .
SIP Domain Name	Enter the TCP/IP address of MiCollab AM.
Transport for outgoing SIP messages	Enter the transport protocol to be used for sending SIP messages to the DMG device. Enter UDP or TCP . The default value is UDP .

SIP Device Name	Enter the hunt group number for the integration. This must match the hunt group number set in the switch section associated with this integration.
Local IP Address to Bind On	Select the local TCP/IP address of the MiCollab AM machine. This is a drop-down box and displays all available local TCP/IP addresses.
SIP Local Connection Port	The port where MiCollab AM listens for incoming SIP messages. The default value is 5060 .
SIP parser qualifier string	<ul style="list-style-type: none"> • Single SIP integration on the call server: Enter the local IP address to which the integration is bound. This field is used by MiCollab AM to match SIP packets to the appropriate SIP integration. • Multiple SIP integrations on the call server: Use a string that is unique to each SIP integration. <p>For example:</p> <p>The extension that will be used as the hunt number on the PBX followed by the @ symbol and the IP of the call server, such as 5000@172.16.4.202. <i>The hunt number must be unique across all IP integrations.</i></p> <p>The Fully Qualified Domain Name (FQDN) of the switch, such as pbx1.sipdomain.com.</p> <p>NOTE This setting must match a string in the SIP header that is unique to this particular integration</p>
Media Packet Size (milliseconds)	Enter the packet size of incoming/outgoing RTP packet sizes. The default value is 20 .

- b** In the **Local Integration Settings** section, select the **Dialogic Media Gateway Settings** view and configure the following parameters:

Table 9. Dialogic Media Gateway Settings Parameters for Integration Options

Field	Value
DMG Model	Select T1 or E1 as the type of DMG device used for this integration. The default value is E1 .
Administrator Name*	Enter the administrator user name configured on the DMG device. The default value is admin .
Administrator Password*	Enter the administrator password configured on the DMG device. The default value is lpodAdmin .

*** NOTE** Requires the Administrator name and password of the DMG device to configure the device for the integration.

- c In the **Local Integration Settings** section, select the **Integration Specific Parameters** view and configure the following option:
 - Set the **Type of Call Progress to use for External Calls** value. How this should be set depends on the gateway used for the integration as follows:
 - **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.
 - 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 mode for this integration.
- NOTE** Select the hunt mode that matches the hunt mode type in IP PBX programming.
- 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 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.
- 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 **Virtual**.
 - b From the **Model** dropdown list, select **SIP STACK**.
 - c In the **Name** field, the name for this board is automatically generated. Enter a new name if necessary.
 - d From the **Protocol** dropdown list, select **SIP IP RTP**.
 - e In the **Number of Lines** field, enter the number of lines this board uses. The total number of lines is limited by the capacity of the board and the number of **Available Line Licenses**.
 - f Click **OK**.
- 4 Select the **Switch** tab and click the **Add** button. The **Switch Integration Data Setup** dialog box appears.
 - a From the **Manufacturer** dropdown list, select **Avaya / Nortel**.
 - b From the **Model** dropdown list, select **CS1000** or **Meridian 1**.
 - c From the **Integration Type** dropdown list, select **DMG E1** or **DMG T1**.
- 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 10. Required Parameters View – Integration Options

Field	Value
SIP Server Address	Enter the TCP/IP address or FQDN of the DMG device.

SIP Server Port	Enter the SIP port on which the DMG device is listening for SIP messages. The default value is 5060 .
SIP Domain Name	Enter the TCP/IP address of MiCollab AM.
Transport for outgoing SIP messages	Enter the transport protocol to be used for sending SIP messages to the DMG device. Enter UDP or TCP . The default value is UDP .
SIP Device Name	Enter the hunt group number for the integration. This must match the hunt group number set in the switch section associated with this integration.
Local IP Address to Bind On	Select the local TCP/IP address of the MiCollab AM machine. This is a drop-down box and displays all available local TCP/IP addresses.
SIP Local Connection Port	The port where MiCollab AM listens for incoming SIP messages. The default value is 5060 .
SIP parser qualifier string	<ul style="list-style-type: none"> • Single SIP integration on the call server: Enter the local IP address to which the integration is bound. This field is used by MiCollab AM to match SIP packets to the appropriate SIP integration. • Multiple SIP integrations on the call server: Use a string that is unique to each SIP integration. <p>For example:</p> <p>The extension that will be used as the hunt number on the PBX followed by the @ symbol and the IP of the call server, such as 5000@172.16.4.202. <i>The hunt number must be unique across all IP integrations.</i></p> <p>The Fully Qualified Domain Name (FQDN) of the switch, such as pbx1.sipdomain.com.</p> <p>NOTE This setting must match a string in the SIP header that is unique to this particular integration</p>
Media Packet Size (milliseconds)	Enter the packet size of incoming/outgoing RTP packet sizes. The default value is 20 .

- a** In the **Local Integration Settings** section, select the **Dialogic Media Gateway Settings** view and configure the following parameters:

Table 11. Dialogic Media Gateway Settings Parameters for Integration Options

Field	Value
DMG Model	Select T1 or E1 as the type of DMG device used for this integration. The default value is E1 .

Administrator Name*	Enter the administrator user name configured on the DMG device. The default value is admin .
Administrator Password*	Enter the administrator password configured on the DMG device. The default value is IpodAdmin .

*** NOTE** Requires the Administrator name and password of the DMG device to configure the device for the integration.

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

- Set the **Type of Call Progress to use for External Calls** value. How this should be set depends on the gateway used for the integration as follows:
 - **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.

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 mode for this integration.

NOTE Select the hunt mode that matches the hunt mode type in IP PBX programming.

- 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.

Testing the TCP/IP Connection

To verify communication between MiCollab AM and to determine if changes have been accepted by the DMG, open the Event Viewer on the system server.

- 1 Select **Start**, right-click **My Computer**, and then click **Manage**.
- 2 In the **Computer Management** dialog box, click **Event Viewer**, and then double-click **Application**.

Look for three event types of messages in the Event Viewer. The source is always AT_SysCfg. The three event types are:

- SUCCESS/INFORMATIONAL
- ERRORS
- WARNINGS

The SUCCESS/INFORMATIONAL entries state the DMG was successfully updated either with or without a device restart. They are:

- DMG device successfully updated (no restart required)
- DMG device successfully updated and restarted

The ERRORS entries state the DMG failed to update or failed to restart, if a restart was required. These Event Viewer entries are generated because of a communication problem between MiCollab AM and the DMG or MiCollab AM was not shut down prior to making changes in the **Required Parameters** section of the **Integration Options** dialog box. They are:

- DMG device update failed
- DMG device successfully updated, restart failed (if required)

The WARNING entry is generated when the DMG requires an update but the user purposely chose to not upload configuration data. The entry is:

- DMG device requires update (user selected not to upload configuration data)

Once the DMG is updated successfully, continue with the completion of the MiCollab AM installation.

Changing the Network Binding Order on the MiCollab AM Platform

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

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

The instructions in this 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 12. 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