

MiCollab Advanced Messaging Mitel TSW E1 DPNSS Integration Technical Note

For version 6.1 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 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 2016, Mitel Networks Corporation

All rights reserved

Contents

Preface	4
References	4
Documentation	4
Documentation Updates	5
Help	5
Document Conventions	5
Features Supported by this Integration	6
Critical Application Considerations	9
Installation Requirements	11
Telephone System Requirements	11
MiCollab AM Requirements	11
Programming the Telephone System	12
Initiating the External Number for the DPNSS Route	12
Programming the System ID Number	12
Programming the Route Category	13
Programming the Route Data	13
Programming Message Waiting for Subscriber Telephones	14
Programming the Call Diversion for Subscriber Telephones	14
Completing the Mitel TSW Programming	15
Installing the Aculab and Dialogic Software Support Components	16
Installing the Aculab PCI Digital Access Card	17
Configuring MiCollab AM	18
Adding the Aculab PCI and Dialogic Linecards to the Boards Tab	18
Completing the Integration	19

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 also assumes that you are familiar with the features and programming of Mitel TSW.

This document describes how to integrate MiCollab AM with a Mitel TSW system using the E1 DPNSS integration. Critical application considerations are documented, as well as installation and programming procedures necessary to integrate MiCollab AM with Mitel TSW. The E1 DPNSS integration is an outband digital integration.

The E1/PRI (ISDN) physical interface is a single 2.048-MB 32-channel interface that provides up to 30 digital trunks or voice channels per interface. Digital Private Network Signaling System (DPNSS) is a signaling protocol that enables the interconnection of PBXs and other equipment that supports the DPNSS protocol.

E1 DPNSS can provide seamless, transparent interconnection of PBXs and PBX supplementary services over a public or private network. In this integration, Mitel TSW sees MiCollab AM as another PBX that is connected over a private network.

The E1 DPNSS connection is established at MiCollab AM with the use of an Aculab™ PCI High Capacity Digital Access card. The Aculab card interfaces with the E1 DPNSS link to Mitel TSW and to the Dialogic card(s) through an H.100 bus.

Calls are sent to MiCollab AM over the E1 DPNSS link, calling- and called-party information is parsed, and MiCollab AM answers with the appropriate dialog. End-to-end DTMF, message-waiting indicator (MWI) operation, and callouts are supported features of DPNSS.

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

References

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

Documentation

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

- **Developer Resources.** Contains programming guides and API references for developers for integrating the server clients and web applications with MiCollab AM.
- **Integration Technical Notes (ITN).** Contains a set of guides that describe the integration methods and instructions for a variety of phone systems to work with MiCollab AM. The ITNs are generally

used by resellers or administrators who are experienced with MiCollab AM and familiar with the integration procedures and terminology.

- **Quick Reference Card (QRC).** Contains shortcuts and quick instructions telling subscribers how to access and use the messaging system.
- **Server Documentation.** Available as a PDF only. Contains administrative guides for administrators about installing, configuring, and administering the messaging system, and user guides for subscribers about accessing the messaging system and checking and sending messages.
- **Spare Parts Documentation.** Contains a set of guides that describe the instructions for installing and configuring hardware parts to work with MiCollab AM. These documents are written for Mitel certified MiCollab AM technicians who are experienced with MiCollab AM and familiar with the procedures and terminology.
- **Software Release Notice (SRN).** This notice introduces the new features, capabilities, and hardware/software requirements for the corresponding MiCollab AM version.

For more detailed documents. Refer to the following list of references:

Table 1. References

Document Type	Document Title
Server Documentation	System Administration Guide
Server Documentation	System Installation Guide
Spare Parts Documentation	Aculab PCI E1/T1 Digital Access Linecard Installation and Replacement

Documentation Updates

Documentation updates may be available from the following sources:

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

Help

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

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

Document Conventions

The following conventions are used in this document:

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

Example: **Enter**

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

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

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

Example: Refer to *System Installation Guide*.

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

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

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

Example: Type the password *voicemail*.

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

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

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

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

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

Features Supported by this Integration

The following tables list the features supported using Mitel TSW with the E1 DPNSS interface.

Table 2. Call forward to personal greeting for these call types

Divert to MiCollab AM on	Supported
No Answer	Yes
Busy	Yes
Forward All	Yes
Follow Me	Yes

Do Not Disturb

No

Table 3. Integration features supported for Mitel TSW with E1 DPNSS

Feature	Supported	Notes
Automatic subscriber logon	Yes	
ANI/CLI	Yes	
<i>Announce Busy</i> greeting on forwarded calls	Yes	
Call screening	Yes	
Caller queuing	Yes	Note 1
DNIS	Yes	
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	
Live record, integrated	No	Note 2
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 from personal greeting	Yes	
Transfers, blind	No	Note 3
Transfers, confirmed	Yes	
Transfers, fully supervised	Yes	
Transfers, monitored	Yes	

Trunk ID for all routing

No

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](#) Notes.
2. Third-party conferences are not allowed on an integrated VM port. To use this feature, you must have a separate non-integrated port.
3. Stations do not divert to an external route when

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.

- Route optimization is recommended when integrating MiCollab AM with an E1 DPNSS interface. Because the DPNSS interface is an external trunk route, all transfer actions require an additional DPNSS channel to initiate and complete the call. When route optimization is enabled in the PBX, the additional channel releases after the transfer is completed or after a period of time set within the PBX. When route optimization is not used, this second channel remains in use for the duration of the transferred call. Additionally, a system ID number must also be configured for route optimization to work properly. To program a system ID, see the section [Programming the System ID Number](#) later in this document.
- The first Aculab PCI E1/T1 card is the master clock on the SCbus; it must be set as the Resolved Primary Master FRU of the Dialogic TDM bus in Dialogic Configuration Manager. For information about configuring the Aculab card, consult the *Aculab E1/T1 PCI Installation and Replacement* spare parts document.
- The Aculab card can only be restarted by restarting the Call Server. This may be required following a loss of synchronization or clock with the PBX over the E1 interface. Alternatively, synchronization problems with the DPNSS interface can be corrected at the PBX by blocking traffic to the E1 board, restarting the board, and then unblocking traffic.
- Aculab does not provide BNC connectors on their PCI type boards. These boards are supplied with RJ45 connectors only. An Aculab RJ45 to BNC converter may be used to convert the connection to BNC.
- DPNSS is an ended protocol, with ends identified as A and B. There is also a glare resolution parameter X and Y, which indicates that a call from the X end takes precedence over the Y end. The default configuration for MiCollab AM is the BY end of the protocol. The telephone system must be configured as the A end and all channels, both real and virtual, must be set to X for glare resolution or the integration may fail.
- The parameter, *Busy telephone line when closed* on the Lines tab of the MiCollab AM Configuration utility is not applicable to this integration.
- The MiCollab AM parameter, *Phone Line Default audio format* in the Integration Specific Parameters view of this integration applies only to Aculab Prosody X linecards. The parameter has no effect on legacy Aculab PCI Digital Access linecards. To change the A-Law/mu-Law audio format of an Aculab High Capacity Digital Access PCI linecard you must change the value of the media card inside the Dialogic Configuration Manager utility.
- MiCollab AM call progress parameters are preset for the Mitel TSW global tones parameter when you choose the correct telephone system during setup. They cannot be re-configured using the call progress tab of MiCollab AM.

- The Call Screening feature requires supervised transfers. To use this feature without having to remove diversion programming from the subscriber telephone set the traffic matrix (TCMAP) and TRAF parameter of the extension category to restrict voice mail ports from calling other voice mail ports.
- The use of traffic-restricted voice mail ports is not compatible with blind transfers. Mitel recommends that you use the monitor transfer type unless the application requires a T-type supervised transfer.
- When using reason code diversions from subscriber telephones, these calls always go to the common diversion position. If MiCollab AM is chosen as the common diversion position (CDCOI), then ICS calls are always diverted to this position, even if individual diversion (CDINI) has been programmed to divert calls elsewhere.
- There is a maximum *rings to wait* value of four rings on a supervised T-type transfer. MiCollab AM is unable to monitor call progress during a transfer because the digital DPNSS trunk does not provide an audio path until a connection is made to the called party. MiCollab AM assumes a six second ring cycle during transfer.
- Use only Blind or Monitored transfer types in MiCollab AM with extensions that are programmed to forward calls back to MiCollab AM on busy or ring-no-answer. To handle such calls correctly, MiCollab AM must be able to retrieve them.
- 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.

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 for MiCollab AM.

Telephone System Requirements

- Mitel TSW with system software version BC9/CN I75 or later
 - One TLU76/2 E1 DPNSS board provides up to 30 voice mail channels
 - TSR 902 0267/15000 cable for the RJ45 high-impedance connection between the TLU76/3 card and the E1 Aculab card
- Or
- TSR 901 0301/7000 cable for the BNC low-impedance connection between the TLU76/3 card and the E1 Aculab card. (Verify the connection type on the Aculab board prior to installation.)

NOTE You must use an Aculab BNC to RJ45 adapter when using a BNC cable.

MiCollab AM Requirements

- MiCollab AM version 6.1
- MiCollab AM software key diskette or feature file with the Mitel TSW DPNSS integration enabled
- One or more Aculab PCI Digital Network Interface single-port, dual-port, or quad-port Card cards and one digital Dialogic port for each MiCollab AM voice port to be integrated (Use Dialogic D/160JCT-U or D/320JCT-U media resource cards)

Programming the Telephone System

Follow the recommendations and programming examples in this section to program Mitel TSW for integration with MiCollab AM. Programming examples show commands and parameters of version BC9 that are necessary for integration; they do not represent PBX programming in its entirety.

The installing technician should be familiar with programming the telephone system. For detailed programming information on this software version or other software versions of Mitel TSW, refer to the appropriate *ASB Basic Exchange and Extra Facility* documentation and the Mitel TSW OEM country-specific documentation.

Initiating the External Number for the DPNSS Route

Initiate the external destination number for the DPNSS route in Number Analysis. Use **ED** as the NUMTYP. Choose an easily remembered number; this is the number that subscribers use to call MiCollab AM.

For example:

```
NANSI:NUMSE=2000,NUMTYP=ED;
```

To verify your work, type the following command:

```
NADAP;
```

Programming the System ID Number

For route optimization to function properly, the telephone system must have a system ID configured.

To check if the system ID is already configured, type the following command:

```
SYIDP;
```

If the system ID is configured to 12345, for example, the PBX returns the following:

```
SYIDP; PRIVATE NETWORK EXCHANGE IS 12345 END
```

Otherwise, you must program a system ID by using the following command, where xxxxx can be any value from 0-99999:

```
SYIDI:EXGID=xxxxx
```

NOTE If you have more than one telephone system in your organization, be sure to assign a unique number to each telephone system.

Programming the Route Category

Initialize the route category for the DPNSS trunks. Set the bits in the parameters as follows:

- SEL d8: This bit must be set to 1 for no virtual call support; otherwise Follow Me diversion does not work.
- SERV d10: Set the number conversion value as required by the numbering plan.
- TRAF d7/8: Set these values according to the site traffic matrix (TCMAP) and the type of customer application. Restricting voice mail ports from connecting to each other may be desired, depending on the transfer type that is used by the automated attendant.

For example:

```
ROCAI:ROU=55,SEL=011000010000,SERV=0010000000,TRAF=03151515,SIG=011100000011,TRM=5;
```

Programming the Route Data

To program the Route data:

- 1 Initialize the route data:

```
RODAI:ROU=55,TYPE=TL50,VARC=00000001, VARI=00000000,VARO=00000000;
```

- 2 Initialize the route equipment. In this example, channels 1 through 30 are being initiated:

```
ROEQI:ROU=55,TRU=1-1&&1-15,EQU=1-1-10-1;  
ROEQI:ROU=55,TRU=1-17&&1-31,EQU=1-1-10-17;
```

- 3 Initialize the destination code to the route previously defined in Number Analysis using the following commands. Be sure that the type of called number in parameter ADC d2 is set to a private value (5-7).

```
RODDI:DEST=2000,ROU=55,ADC=0505000000000250;
```

- 4 Route Optimization is recommended when integrating MiCollab AM with the DPNSS interface. When route optimization is not used, two DPNSS channels are required to complete a transfer. Enable route optimization with the ASPAC command:

```
ASPAC:PARNUM=66,PARVAL=1;
```

Consult the Mitel TSW documentation for additional information on route optimization.

- 5 Verify the system data with the SYDAP command to ensure that transfer before answer is permitted and that the diversion priority is set to that which is required for the application:

```
SYSTEM DATA  
TRANSFER BEFORE ANSWER = PERMITTED  
DIVERSION PRIORITY = INTERCEPTION DIVERSION  
NUMBER OF TRUNKS IN CONFERENCE = 6  
STANDARD PAGING = MEET ME  
PAGING JOB = ONE MISSION
```

Programming Message Waiting for Subscriber Telephones

- 1 Digital subscriber telephones can have an MWI key assigned in addition to the message waiting display on their LCD telephones. Subscribers can press the lit MWI key to retrieve messages from MiCollab AM. Use the Key System Function Key Change command to assign an MWI key appearance on each subscriber telephone.

For example:

KSFKC:DIR=2001&&2299,KEY=2,FCN=MEW;

To verify your work, type the following command:

KSFKP:DIR=2001&&2299;

- 2 Analog subscriber telephones can receive a pling ring for MWI or a special dial tone. Use the ASPAC command to set either pling ring or special dial tone.

For example:

ASPAC:PARNUM=88,PARVAL=1;

(PARVAL=1 sets special dial tone and PARVAL=0 sets pling ring.)

NOTE When PARVAL=0 the *Message Waiting* text message on digital set displays is not available.

- 3 Program the time interval between pling rings when pling is used for message notification. The following example sets the pling interval to fifteen minutes.

For example:

ASPAC:PARNUM=45,PARVAL=90

To verify your work, type the following command:

ASPAP;

Programming the Call Diversion for Subscriber Telephones

Assign the MiCollab AM hunt group as the diversion point for subscribers. Use the CDCOI command to create a common diversion to voice mail for subscribers or use the CDINI command to create individual diversions.

For example:

CDINI: DIR=2001&&2299, DIV=2000;

To verify your work, type the following command:

CDIDP:DIR=2001&&2299;

If call diversion is not programmed, subscribers must use the follow me feature to divert calls to MiCollab AM.

NOTE If MiCollab AM is chosen as the common diversion position (CDCOI), then ICS calls are always diverted to this position, even if CDINI has been programmed to divert calls elsewhere. In other

words, reason code diversion always goes to the common diversion position. Refer to the VIM online book for more information on programming reason code diversions.

Completing the Mitel TSW Programming

Verify that the programming is correct by using the print command related to each executable command.

Installing the Aculab and Dialogic Software Support Components

The Aculab and Dialogic software support components are installed in conjunction with the MiCollab AM Server software when you select the components as part of the installation package. If you have previously installed MiCollab AM software, you must re-install it to install the Aculab and Dialogic software support components. Be sure to exit any running Windows programs before starting the Setup program.

IMPORTANT If this is an existing MiCollab AM system with a previous version of Dialogic or Aculab software installed, you must remove it and any Dialogic point release software before you install MiCollab AM Server software and the Dialogic and Aculab Software Support Components on the Call Server platform. If the MiCollab AM InstallShield Wizard detects an existing version of Dialogic software during the setup process, the installation is aborted and a message displays to un-install all Dialogic software first. For more information on removing previous versions of Dialogic software, refer to the online help or the *Removing, Installing Dialogic and Aculab Software Support Components* system installation manual.

Installing the Aculab PCI Digital Access Card

The Aculab PCI E1/T1 Digital Access card provides the network DPNSS interface between the PBX E1 or T1 network card and MiCollab AM. The Aculab PCI Digital Access card interfaces to MiCollab AM through an H.100 bus to one or more Dialogic cards that supply the media component of each MiCollab AM line. A single-port E1 Aculab card supports 30 voice channels, a dual-port E1 Aculab card supports 60 voice channels, and a quad-port E1 Aculab card supports 120 voice channels.

For detailed instructions on the installation of the Aculab card, refer to the *Aculab E1 PCI Installation and Replacement* spare parts document.

Configuring MiCollab AM

Once the telephone system is programmed, you must configure MiCollab AM for the integration. During setup, you need the following information, which is specific to this integration, to configure MiCollab AM.

To configure MiCollab AM for the integration:

- 1 In the Installation Configuration dialog box, enter the name of your site in the Site Name box, the mailbox length in digits in the Mailbox Length box, and the first extension number for the first line in the First Extension box.
- 2 Select **Mitel** as the manufacturer, **MX-ONE** as the model and **DPNSS** as the integration type.
- 3 In the Switch Section Options dialog box, enter the hunt group access code. This is the route destination code you configured previously in the section, [Programming the Route Data](#). This is the pilot number that users dial to reach MiCollab AM.
- 4 Once setup is complete, go to the Lines tab to verify that the extension numbers are assigned to the correct lines and enable callouts to suit your application. For information on configuring callout settings, see the topic *Configure callout settings*, in the online help system.

Adding the Aculab PCI and Dialogic Linecards to the Boards Tab

The first Aculab PCI telephony interface linecard is the clock source for all Dialogic cards installed in the Call Server, so all of the Aculab and Dialogic cards installed in the system must be connected to the same H.100 bus. Before the Dialogic service can be started, the Aculab card must be installed, configured, and running in the system. Once the Aculab software is installed the Aculab card is automatically configured in the Call Server. You must configure the correct integration in the Integrations tab and run the Auto Detect wizard in the Boards tab of the MiCollab AM Configuration utility.

To Auto Detect the Aculab PCI and Dialogic linecards in the Boards tab:

- 1 Click the **Boards** tab, and then click the **Auto Detect** button.
- 2 The Auto-Detect wizard starts, and then finds each Aculab and Dialogic linecard that is installed.
- 3 The wizard prompts you to select the type of interface. Click **Yes** if you are connecting to a T1 interface. Click **No** if you are connecting to an E1 interface.
- 4 The system adds any new boards not previously found and automatically configures the Aculab card in the Dialogic Configuration Manager with the correct settings.
- 5 Click **OK** when you are finished.

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

customize other settings in the Switch Sections and Integration Options dialog boxes to suit the requirements of each application. Refer to *System Installation* or the online help system for more details about setting these parameters.

Completing the Integration

Now you are ready to finish installing MiCollab AM. See the *System Installation Guide* and *System Administration Guide*, or refer to the MiCollab AM online help system, for instructions. For general information on integrations, you may also wish to consult *Integrating MiCollab AM with the Telephone System*, in the *System Installation Guide*, and the topic *Integrate the Telephony Server with the telephone system*, in the online help system.